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A Study of
Specific Learning Difficulties
in Tertiary Education

by

David Allan Gauntlett BA, BSc.

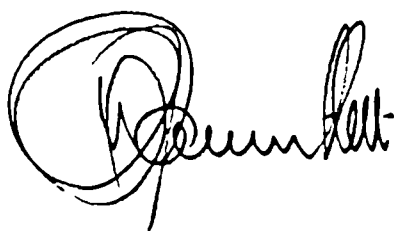
Thesis presented to the Open University
in fulfilment of the requirements for
the degree of Doctor of Philosophy in
the discipline of Educational Technology

November 1987

Au r

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David Gauntlett

November 1987

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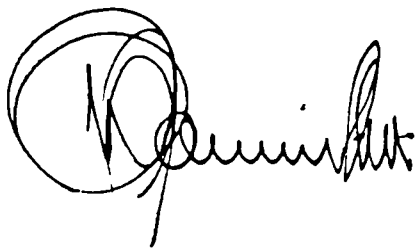
No part of this thesis has been published in its present form. A certain small amount of the information has appeared in the following:

GAUNTLETT D.A. (1980) Dyslexia: Past, present and future.

The Eric Culver Memorial Lecture,
City University, London

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Vol 21, No 2, p 33-36.

HALES G.W. and GAUNTLETT D.A. (1981) Experiences of
adults with dyslexia in tertiary education.
Paper presented to the International
Conference on Dyslexia: Causes, Diagnosis
and Treatment.

A handwritten signature in black ink, appearing to read 'David Gauntlett', with a large circular flourish at the beginning.

David Gauntlett

November 1987

ABSTRACT

This study is unique in investigating instances of Specific Learning Difficulties (Dyslexia) among mature students in British institutes of tertiary education. Despite growing awareness of this condition, it is only during the last thirty years that cases of dyslexia among adults have been distinguished from aphasia.

Assessments were conducted using a structured questionnaire, psychometric tests, measures of attainment, vocational interest and personality. Test results provided support for the view that dyslexia is characterised by a discrepancy between language skills and intellectual ability accompanied by measurable cognitive differences. Significant differences were found on tests of short term memory, while spelling difficulties were the most enduring form of written language difficulty. Differences found on measures of personality, are thought to reflect an interaction between personality and coping strategies. Most subjects had felt constrained to take jobs with a low interest level, ie. they had compromised their vocational interests and subsequently achieved lower socio-economic status than their fathers.

The investigation into the provision made by British universities revealed that very few have any formal policy for dealing with dyslexic students. Most were unable to state what course support or examination concessions were available.

In a study of factors related to modality, dyslexic students took longer to read material and remembered less than other groups. When using multi-modal material dyslexic subjects remembered more but must reconcile improving their recall ability with the expense of spending more time. In a second study of factors thought to influence the marking of scripts it was found that higher marks were not awarded to typewritten scripts free from spelling errors. Changes in format only influenced the focus of the tutors' comments.

The conclusions are that dyslexia does not improve spontaneously, the dyslexic child is likely to become a dyslexic adult who will continue to experience difficulties with language skills, especially spelling, while the individuals educational, social and occupational ambitions are likely to be compromised because of their specific learning difficulties.

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CHAPTER 1

I N T R O D U C T I O N

I N T R O D U C T I O N

"Dyslexia is certainly not often diagnosed in adulthood even though genuine instances are encountered ... perhaps the patients have resigned themselves to a state of hopeless ineducability ... the victim may have merged into the amorphous population of adult illiterates and semi-literates. Maybe he has eventually made such improvement as to achieve modes of social and economic adjustment, but remain as a poor speller, an unwilling correspondent and a reluctant reader. It is conceivable that the slow bloomer eventually matures so no longer to be conspicuously handicapped."

Critchley (1970)

The Background to the Study

There has been a growing awareness that mature students as well as children may experience Specific Learning Difficulties, often referred to as Dyslexia. In America, Rawson (1968) drew a positive conclusion to her study which followed the progress of a group of dyslexic boys into adult life. In Britain, Critchley (1970) and others have noted that very few adults have been identified as suffering from dyslexia. Critchley suggests that this may be due to individuals (a) becoming resigned to their limitations, or (b) that they eventually acquire sufficient language skills to function without being conspicuously handicapped. Regrettably there have been very few studies carried out in order to discover which outcome is the more frequent.

Two British reports have stressed the need for further research related to adults with dyslexia, firstly in the report 'People with Dyslexia' (Kershaw 1974) and subsequently in a report by a Committee investigating the incidence of Specific Learning Difficulties (Dyslexia) among students registered with the Open University (Hales 1976). The majority of papers reviewed deal with dyslexia and language learning difficulties in childhood. There are relatively few follow-up studies, which attempt to trace the individuals' progress from childhood into adolescence or adult life. Those studies which do deal with dyslexia in adult life most frequently take the form of individual case studies. In searches of the literature no studies similar to the present one - dealing with adults in tertiary education - could be identified in either the British or American literature.

As a prelude to this research a pilot study was carried out with co-operation from dyslexic students then studying with the Open University. This revealed the possibility of a third outcome in addition to those identified by Critchley (1970); (c) that a minority of adults who continue to experience dyslexic type difficulties may chose to pursue academic courses in a personal search for 'self-actualization' (Maslow 1962). Partly as a result of the pilot study it was decided to collect data from students following courses in all forms of tertiary education, this would have the advantage of providing information on a wider range of subjects, following courses at different institutions, at different academic levels and taught by different methods. Three groups were identified, consisting of students in Further Education, in Higher Education and in the Open University.

The Objectives of the Study

Having established that there was very little information about adult dyslexics, and no studies of adults undertaking tertiary education, the following objectives were set for this study:-

- a) To identify and collect data about dyslexic adults in the three main spheres of British tertiary education.
- b) To investigate the interaction between dyslexic adults and the educational institutions where they were studying.
- c) To investigate the effectiveness of certain modes of teaching.
- d) To obtain psychometric data from the subjects within the groups studied, using standardised tests in the form of an assessment consistent with normal procedures.
- e) To compile data in order to make comparisons between:-
 - 1. the three groups within tertiary education
 - 2. between subjects in the study and the general population.
- f) To obtain information concerning the effects that dyslexia had upon each individuals education, social behaviour and career decisions.
- g) To assess patterns related to personality factors and vocational preference.

The Layout of the Study

As a background to this study it was decided to carry out a study as to the historical context, and to this end a review of the literature was undertaken. This sought to identify how cases of written language difficulty were recorded in the past. It revealed that for more than 2,000 years, cases where adults had lost language skills, had been described but not classified. The majority of studies referred to brain injury or trauma which had resulted in the disturbance or complete loss of power of speech. Later studies have included case studies and even first-hand accounts of difficulties with reading and writing, usually associated with a seizure or loss of other faculties. Such difficulties were frequently associated with speech problems and although differently described, appear to be part of that condition which is now described as Aphasia. Records of failure to acquire written language skills (reading, writing and spelling) by otherwise able children is a comparatively recent phenomena. Several factors may have contributed to this omission, the main one was lack of understanding about child development. Literacy had also become associated with social class which was thought to be linked to intelligence, social custom which favoured educating boys and the provision of private education which was linked to wealth. Recognition that an otherwise normal child might experience difficulty with reading and writing seems to have been closely associated with the introduction of universal education in the second half of the last century. State education not only brought into the classroom many children who would otherwise not have received an education, but it also established a body of professionals who were responsible for the children's health and education.

This historical perspective provides the background for this study into factors appertaining to individuals who as adults continue to experience difficulties with written language skills. The failure of such adults to acquire competence in reading, writing and spelling during childhood is studied in relation to its effect upon their adult lives. This study is unique at the time of writing, since it deals with a group of subjects who, despite earlier difficulties are currently following courses in tertiary education. Data was collected concerning the subjects' intellect, cognitive style, reading and spelling ability, personal history, personality and vocational interests. Statistical analysis were undertaken and inter- and intra-group differences are discussed.

The descriptive data concerning the individuals and groups studied was complemented by three further studies.

1. A study of provision made for dyslexic students in British Universities.
2. An experiment aimed at assessing the extent to which examiners are influenced in their marking by the appearance of a script.
3. An experiment which tried to find out what effect the mode of presentation had upon the subject's ability to read and learn from a given text.

The final section reviews case studies concerning individuals involved in this research, and relates these to other studies both OF dyslexic adults and BY dyslexic adults, in an attempt to draw some conclusions about this group's unique needs.

The Subjects

In order to contact subjects, educational centres were contacted and a psychological assessment was arranged with adult subjects thought to have specific language learning difficulties. Assessment was to be carried out using a standardised battery of psychometric tests. This arrangement was also made via the Regional offices of the Open University, Colleges and Universities, various independent educational centres and the Dyslexia Centre at St. Bartholomew's Hospital, London.

Subjects were selected according to the following criteria, they were :-

- over 21 years old
- had a Specific Learning Difficulty/Dyslexia.
- were currently pursuing an educational course.
- willing to participate in the research study.

The criteria were wide ranging and strict. Some adults who met the above criteria but also had psychiatric or primary emotional problems were excluded, as were adults suffering from 'acquired' dyslexia resulting in their losing previously held language skills. Some subjects were excluded because they were under 21 years old, or were not following a course in tertiary education. A minority were excluded because they were either unable or unwilling to complete the questionnaires on personality or vocational interest.

From the total pool of some 200 adults assessed, ten subjects were chosen for intensive study from each of the three categories, comprising Further Education, Higher Education and the Open University.

The Assessment

Background and personal data was collected using a structured questionnaire designed as part of the research project. The psychometric instruments used included :-

Wechsler Adult Intelligence Scale

Wide Range Achievement Test - Graded Word Spelling Test

Neale Analysis of Reading Ability

Cattell 16 PF (Form E) Personality Test

Thurston Vocational Interest Schedule

The initial intention had been to use the same test instruments in all cases, but to have a variable number of subjects from each group. The differences between groups would then have been allowed for when undertaking the statistical analysis. During the course of the research it became clear that due to external constraints, particularly the difficulty in contacting potential subjects because of the rules of confidentiality observed in most educational institutions, the total number of suitable subjects would be limited and the decision was taken to concentrate on obtaining a smaller overall number of subjects with equal numbers in each group.

All the subjects included in this study were administered the psychometric tests listed above. Other psychometric instruments, including the Bender Visual Motor test, Benton Visual Retention test and the Wepman Test of Auditory Discrimination were used clinically, but not sufficiently frequently to enable any meaningful analysis to be made. The results from the Wechsler Adult Intelligence Scale were analysed along the lines described by Kaufmann (1979).

A detailed Questionnaire was administered as part of the assessment procedure, and took the form of a structured interview, with the researcher recording the subject's responses. The Questionnaire sought clinical and background information as well as seeking to elicit details of how dyslexic type difficulties had influenced their adult lives. An attempt was made to find out about any strategies which had helped any individual to cope with their difficulties and how these difficulties had influenced decisions that they had taken in relation to their social, educational and working lives.

Work has a major influence upon adult life, as a form of self-expression as well as the individual's social-economic status. It can also provide a basis for comparison in terms of social-economic mobility. Education and specific learning difficulties are both thought to have an influence on the individuals subsequent career, so questions were included in the questionnaire concerning their father's job and what factors had influenced the individual's own choice of employment.

To provide a basis for comparison between the individuals 'actual' job and their 'ideal' job, the Thurston Vocational Interest Inventory (Thurston 1947) was also administered.

Several studies have reported emotional or behavioural difficulties in relation to Specific Learning Difficulties (Fernald 1943, Frauenheim 1975). Subjects were not included in this study if it was suspected that their emotional problems were 'primary' and preceded their learning difficulties and those potential subjects who had severe or psychiatric problems were also excluded even though the problems might have been 'secondary' to their language difficulties.

In order to obtain a measurement of personality, preferably measuring several dimensions, a test was sought which would be sufficiently detailed, yet, was standardised so as to allow comparison with a normal population. Such a test had also to be suitable for use with subjects who had a low level of literacy. The most suitable test proved to be the Cattell 16 Personality Factors test, which has a Form E designed especially for use with low literacy groups.

The complete psychological battery was designed to provide clinical, descriptive and comparative data. The majority of psychometric tests used had been standardised, so although there was not a control group in this study, comparisons could be made between subjects studied here and other populations. These results were subjected to statistical analysis which enabled inter- and intra- group comparisons to be made.

Other Investigations

Three other studies were carried out in the hope of learning more about the circumstances surrounding dyslexic adults in tertiary education.

1. A survey of the provision made for dyslexic students in British Universities was carried out using a postal questionnaire. This was sent to all Universities, requesting information on admission policy, numbers admitted, course work and examination concessions. Only three Universities had a formal policy to guide tutors in their dealings with dyslexic or handicapped students.
2. In an attempt to identify the effect that spelling errors and presentation differences have upon pedagogic perception when making scripts, an experimental format was devised. This involved a team of fifteen experienced tutors marking a script which was presented in three different forms.

The results suggest that tutors did not significantly favour the type written script without spelling mistakes when compared with a script from a dyslexic student.

3. The last investigation concerned the effect of modality upon the students' ability to learn. In this experiment a passage was presented in three different forms to four groups of students, consisting of dyslexic students and three different control groups. The material was either normally printed and annotated or printed and accompanied by an audio tape. The dyslexic students were found to perform significantly worse than non-handicapped students in all three conditions.

The Limitations of this Study

This research was undertaken in compliance with the regulations covering the award of a higher degree by the Open University. As such it was limited in both time and the amount of funds available. Every effort was made to ensure that the subjects included were representative of the chosen population, and they were drawn from throughout England and Wales. The number of subjects included in the intensive study is comparatively small for statistical purposes. This represents a much larger population of subjects who were assessed, but who had been divided into two groups on the basis of the above criteria, i.e. those chosen and those rejected. The number studied could have been increased by undertaking a longer term study possibly with greater co-operation from educational institutions.

It could be argued that this study deals with observed phenomena rather than a homogeneous sample, especially since there is no such thing as a 'typical' dyslexic. What is reported here are the characteristics of a group of 30

individuals. Since there is no control group, most of the psychometric tests administered were chosen as having been standardised so this permitted comparison of the individuals with the general population; not all the subjects reacted in the same way and individuals were often as different from each other as from the general population, a fact that is often lost when the mean scores are quoted or a statistical analysis undertaken.

This study dealt with a small and very specific group of individuals who form only part of an under-researched adult population. Much work remains to be done in the study of dyslexia in adult life. More research needs to be undertaken through longitudinal follow-up studies. The personality differences revealed in this study may also prove to be a fruitful area for further research. One area which this research has only touched upon has been the use of strategies by adults to adapt or come to terms with the demands made upon their written language skills in adult life. Further investigation of 'coping' strategies and the harnessing of new technology to the needs of the adult dyslexic might prove to be a very practical and rewarding investment of time and resources.

Defining Dyslexia

A major problem for any study, especially one dealing with a contentious subject, is defining the terms to be used. The most quoted definition has been one prepared by the World Federation of Neurology (1968)

In British legislation the term Dyslexia was first used in the 'Chronically Sick and Disabled Persons Act' 1970, which referred to children with 'acute dyslexia' but did not offer any precise definition. In their influential 'Isle of Wight' study, Rutter, Tizard and Whitmore (1970) based their criteria upon reading ability. Poor readers were divided into two groups, which Rutter described as Backward and Retarded readers. Backward readers were those children who had a reading age on tests of comprehension and accuracy which was more than 28 months below their chronological age. Retarded readers were those who were 28 months behind the expected level on tests of reading comprehension and accuracy compared with the level predicted on the basis of their intelligence.

An Advisory Committee was set up the following year to investigate whether guidance was required by education authorities on the education of children with dyslexia. The report of the Committee 'Children with Specific Reading Difficulties' was published in 1972 (Tizard 1972), and described reading.

Although they believed that it was possible to identify a minority of children who had severe reading difficulties they felt the term dyslexia was misleading.

The Department of Employment and the British Council for the Rehabilitation of the Disabled took the initiative in setting up a Working Party which produced a report 'People

with Dyslexia' (Kershaw 1974). This dealt with the problems of adults, and though dated now it is still an important reference work concerning dyslexic adults in Britain. In 1975 the Bullock Report 'A language for Life' was concerned that 'standards are not satisfying present day standards' and advocated the literacy skills needed at all ages in terms of 'functional literacy'. Though this report never had the impact on language teaching in schools that might have been hoped, it did highlight the need for tuition to be provided for illiterate and semi-literate adults.

Critchley (1970) had hypothesised that there would be a 'hump' at the lower end of the distribution curve, indicating a skewed distribution with more people suffering from reading difficulties than might have been predicted. Although Critchley offered no evidence in support of this, Rutter and Yule (1975) using sophisticated methodology and statistical analysis came to similar conclusions, reporting that there was a distinct phenomenon, which they referred to as 'Specific Reading Retardation'. In other studies Yule, Rutter and Thompson (1974) and Rutter and Tizard, reported further evidence based on statistical analysis. Other writers have suggested that there is a need to distinguish on other grounds between subjects with specific learning difficulties and individuals who were generally backward, but also retarded in reading and writing (Davies and Cashdan 1963, Young and Tyre 1983).

Many reports concerning developmental dyslexia have attempted to describe characteristics or signs' which are thought to be associated with dyslexia (Money 1962, Critchley 1964 & 1970, Vernon 1971, Miles 1974, Critchley & Critchley 1978). Such 'signs have included reference to sex distribution,

laterality and cerebral dominance, minor neurological signs, speech-language difficulties, motor development, directional confusion and environmental factors (Wheeler and Watkins 1979). Other studies have made reference to the familial incidence associated with dyslexia, a correlation between the ability to read and various home influences, the size of the family, level of parental aspiration, educational level achieved by the parents and father's occupational status. (Morris 1966, Sewell & Hauser 1975).

Danehowever (1972) has described the effect dyslexia has on both children and adults as a 'vicious circle'.

The Warnock Report (1978) 'Special Educational Needs: Report of the Enquiry into the Education of Handicapped Children and Young People' which advocated the abolishing of the previous categories of handicap in favour of the general term 'Special Educational Needs', also listed was warranting further research.

The Warnock Report suggested that 20% of children may experience 'special educational needs' during their school years. For such children, the 1981 Education Act required the preparation of a 'Statement' of need which should contain reference to how appropriate help should be provided. This system was thought to have the advantages of making provision for parental involvement in the assessment process and in the provision of educational help. The Warnock Report and the 1981 Education Act which embodied it in legislation, concur with the generally accepted view that reading and learning difficulties are to be found in intelligent children (Tarnopol & Tarnopol 1978) but preferred the term 'Specific Learning Difficulty'. Two subsequent reports from the

National Foundation for Educational Research (Tansley & Panckhurst 1981) and the monograph by the British Psychological Society (BPS 1983) have also expressed a preference for the term Specific Learning Difficulties.

Assessment of whether a 'Special Educational Need' or 'Specific Learning Difficulty' exists poses several difficulties, Thompson (1979) proposes the use of a sequence of steps which he set out in the form of a 'flow diagram' (Appendix F) to illustrate a possible method of identifying an individual's needs.

The terms most commonly used in relation to educational difficulties can be viewed in relation to their generality. The term 'special educational need' is the most comprehensive term, intentionally used to encompass all those young people who might require a special educational provision. Other terms may be narrower and more precise, such terms relate to a decreasing number of individuals as the terms become more specific.

A conceptual model illustrating the relationship between increasingly specialized terms might appear as follows :-

SPECIAL EDUCATIONAL NEEDS

LEARNING DIFFICULTIES

SPECIFIC LEARNING DIFFICULTIES

DYSLEXIA

This model attempts to illustrate the relationship between the terms used in this study. The term 'Special Educational Needs' is seen as embracing all forms of educational need, intellectual, emotional or physical, long term or transitory. A 'Learning Difficulty' would describe all difficulties in learning from conventional instruction, including problems due to intellectual or emotional problems. The term 'Specific Learning Difficulty' has been described as being specific to language learning difficulties, but not implying any particular aetiology. There seems to be a need to distinguish between difficulties stemming from lack of educational opportunity, bi-lingual influences or sensory difficulties and those individuals who experience a similar level language difficulty which stems from a particular cognitive pattern. In this model dyslexia is the smallest and most specific category including only those individuals who have both language (reading and spelling) difficulties accompanied by a cognitive pattern associated with dyslexia. (Thompson & Grant 1979; Miles & Miles 1980).

The term dyslexia is used throughout this study, although it has been observed that the preferred term may vary according to which field the author is working in (Young & Tyre 1983), the location where the assessment is made, or the preference of the funding body (Reid 1968, Bajek 1980) Cruickshank (1968) reported.

Many terms are very similar and consist of re-arranging descriptive adjectives, which prompted Fry (1968) to advance his 'do-it-yourself' terminology generator. A decade later Smith (1978) listed some forty-eight possible alternative terms currently in use.

Cruickshank (op, cit) gives an illuminating example of the problems caused by the different terms used in the United States.

This lack of agreement about the terms which should be used to describe the problems faced by a particular child or adult has often contributed a lot to the feelings of insecurity of individuals experiencing written language difficulties (Gauntlett 1981). The advantage of using a specific term is that it may assist the individual, and others involved, to achieve a better understanding of the problem and possible remedial action.

The advantages of using the term dyslexia arise because :-

1. It removes parental guilt;
2. It is a teachable diagnosis for which remedial programmes have been developed;
3. It prevents the use of harmful labels;
4. It encourages all concerned to seek help and advice;
5. It suggests a cause, and precludes global learning difficulty;
6. It encourages the affected individual to develop appropriate learning strategies;
7. It cannot be seen as an excuse for apathy since remedial help and appropriate strategies are known which help the individual to make appropriate adjustments;
8. It makes possible appropriate concessions by examination boards;
9. It provides the individual with insight into his/her own difficulties;
10. It prevents a sense of isolation;

11. It encourages further research and the development of pedagogic methods.

It is argued that a major advantage of using the term dyslexia is in relation to adults. Many adults have lived with repeated failure, experiencing criticism, ridicule, fears of failure and fear of the deficiency within themselves. Many adults report worrying extensively about their ability to cope. Without a clear understanding as to the extent and nature of their problems, there remains an (irrational) fear which may manifest itself in apathy or secondary emotional difficulties. To this fear of failure has to be added an element of uncertainty, as because of past failure individuals are pre-disposed to fear that they will fail at a new task. These difficulties may be ameliorated by assessment and counselling, but not without an admission that there is a problem and some insight into how it may be overcome. Unfortunately many adults have denied their difficulties or adopted elaborate strategies to avoid detection, only a few gain insight into their problems and can choose to admit or conceal their difficulties, and use appropriate strategies. An assessment by an accepted 'authority' can prove invaluable in changing the individual's view of himself, and providing the basis for educational help or counselling. This does not decry 'self-assessment' which may help the individuals to seek help, but may not be adequate as the basis upon which others can make decisions.

Present day society places a high value on literacy and communication skills. When a child fails to keep pace with its classmates, the personal sense of failure is reinforced by the chiding of teachers, teasing of peers and the distress of parents. Written language skills are so important that if

a problem is experienced with reading or writing then difficulties in assimilating or expressing learning in other subjects, often follows. Some writers (Fernald 1943 Critchely 1970) have suggested that the child who has been robbed of self-esteem is more likely to experience emotional, behavioural or delinquent tendencies. Remedial help is designed to overcome such problems, but the prognosis is poor unless the problem is identified early Satz et al 1975) Spache 1978), Rawson (1968) argues that with appropriate intervention dyslexia need not be an insurmountable barrier to academic or professional success. The fact that only a few dyslexic children are identified as dyslexic adults suggests that Critchley (1970) may have been correct in thinking that many simply give up trying and merge into the population of adult illiterates.

An alternative outcome is investigated in this research, that many dyslexic adults do achieve success despite their difficulties and without mastering the written language skills expected of them. The very fact that they voluntarily returned to a situation which would make the severest demands upon their written language skills is attributed to their tenacity, coping strategies, cognitive style and personality.

The Definition used in this study

The term Dyslexia has been used here as being synonymous with the form of developmental language difficulty often referred to as Specific Learning Difficulty.

Throughout this study these terms are used to describe a person who has a specific language difficulty affecting spelling, reading and other written language skills, characterised by a discrepancy between attainment and intellectual potential and accompanied by evidence of constitutional cognitive differences.

CHAPTER 2

THE ORIGINS OF DYSLEXIA

THE ORIGINS OF DYSLEXIA

"Since I hold definite views of my own, this historical introduction cannot be an unprejudiced account, for it is intended to prepare the way for fresh facts and new theories. I hope that I have done no man any wrong, and beg those of my fellow-workers, who think they have been neglected, to pardon my want of comprehension."

H. Head, 1926: Preface to "Aphasia and Kindred Disorders of Speech."

The history of Dyslexia lies in Aphasia. Historically the two terms were inextricably entwined; no distinction was made between the forms of language loss, whether oral or written. Even among early descriptions, discernable differences are evident, and these were later categorised as distinct syndromes. These findings influenced, and were influenced by, philosophies as to the spiritual and functional nature of the mind and its relationship to the soul. An example of the different models used to depict the functions of the brain can be found in the mechanistic models favoured by Descartes (Jefferson 1940) and the Cartesian school. With the growth of medicine, anatomy and science, terms were developed to describe difficulties related to language skills. Although initial reports had referred mainly to the effect upon speech, later cases reflect the spread of literacy, and its growing importance, and these made reference to problems associated with written language skills. As a background to the understanding of language disturbances, it is necessary to review the literature on what is now known as Aphasia. Literally, (and in its present usage) the word 'Aphasia' refers only to the speech aspect of language. It comes from the Greek word 'phanai' which means 'to speak'. However, the term 'Aphasia' has come to be used quite loosely

to denote almost any kind of language disorder, but with the implication that the disturbance is due to some form of acquired brain damage.

Note: APHASIA, Latin from Greek aphasia, from aphatos to utter and phatos from phanai to speak, a total or partial loss of the power of using or understanding words, usually caused by brain disease or injury.

Webster's Dictionary (1978)

This historical review is restricted to a simplified catalogue of 'first recorded' cases. This enables the reader to gain a chronological perspective into the development of distinguishing language disabilities. This meant excluding any review of what impact such discoveries had on the medical knowledge of that time, the impact on pupils of the eminent physicians involved, or the schools of thought that embraced these discoveries.

Head (1920 & 1926) dismissed both the ancient and the mediaeval background to the subject within a few paragraphs. In particular he attacked the speculative doctrine originating with the ancient Greeks, possibly Herophilus, that the brain contained the ventricles, each of which was the dwelling place of one or more aspects of the soul. Magoun (1958 & 1959) traces the development of ideas relating to the mind and brain back to Plato's "Timaeus" (translated Cornford (1952) recording the deliberations of the Academy of Athens. The visceral organs of the Platonic scheme usurped the capacities earlier attributed to the spinal marrow (Singer 1956).

These theories continued to exert influence long after they had in fact been rendered untenable by the dissections of Vesalius, the Flemish anatomist, in the early part of the sixteenth century (Vesalius 1543, Singer 1952). Thus, in 1798 Sommering thought the seat of the soul was in the fluid that filled the ventricles (Head 1920), and even as late as 1844 the author of the article on psychology in Wagner's "Handwörterbuch der Physiologie" states that there are facts "which make it very probable that the cerebral ventricles are the organ which stands in closest relation to consciousness". A different approach has been taken by several authors who have sought evidence about aphasia from direct clinical records. In particular, the works of Trousseau (1931), Weisenburg & McBride (1935), Critchley (1959) and Benton & Joynt (1960) provide excellent reviews. Through such works it is possible to trace the major clinical descriptions applicable to this field, from Ancient Greece to the Nineteenth Century.

Ancient Descriptions

The earliest accounts are to be found in the "Edwin Smith surgical papyrus", the author of which may have been Imhotep who lived some 3,000 BC. These descriptions of what is today called traumatic aphasia date from between 2,500 and 3,000 years before Christ, and record two examples of loss of speech following a head wound.

(Case 20) "One having a wound in his temple, penetrating to the bone and perforating his temporal bone, while he discharges blood from both his nostrils, he suffers with stiffness in the neck and is speechless. An ailment not to be treated."

Again (Case 22) "One having a smash in his temple, he discharges blood from his two nostrils and from his ear, he is speechless, and he suffers with stiffness in his neck."

from Critchley (1959).

Hippocrates made reference to loss of speech in various conditions in his "Epidemics" (c. 400 BC), (translated Chadwick and Mann 1950), there is reference to a woman taken ill during her third month of pregnancy, being seized with fever and backache. On the third day she developed pain in the neck and head. She "quickly lost the power of speech; the right arm was paralysed with convulsion after the manner of a stroke". However, on the fourth day her speech was restored, though still indistinct (case 13). This is of major significance, for as Macdonald Critchley (1959) points out, some 2,000 years elapsed before the clinical association between right side paralysis and loss of speech was noticed. This, however, was not an isolated or unconnected incident; in the writings of the Hippocratic School there is a passage in the Coan Prognosis (No. 353 in the Chadwick & Mann 1950 translation) which associates temporary speechlessness (anadie) following convulsions "with paralysis of the tongue, or of the arm and right side of the body". When this is read in combination with the observation that an "incised wound in one temple produces a spasm in the opposite side of the body" (Coan Prognosis No. 448 in the Chadwick & Mann translation), it is seen that the essential ingredients for relating aphasia to a lesion of the left hemisphere were present as early as the Hippocratic writings. But of course, there is no evidence that the connection was actually made.

The conclusions of the Academy of Athens, meeting in the fourth century BC have been preserved in Plato's 'Timaeus', (Cornford 1952). The general term soul had been used to describe man's faculties, which the ancient Greeks believed was located in the spinal marrow (Woolam 1957 and 1958). In Plato's tripartite soul, the divine part subserving intellect and reason was located in the head. The mortal portions of the soul were separated from the head by the neck, which was thought to prevent the emotional soul seriously disrupting the power of reason. The lowliest soul, associated with appetite, was depicted as being located in the stomach and pelvis, while the heart was a vital part of the emotional soul. The brain was also divided into three parts, the anterior being thought of as being in two parts, and described from front to back as: *sensus communis*, imagination, phantasy, cognition and memory.

The First Century A.D.

The writings of Valerius Maximus (c. A.D. 30), (Kempf 1888), are significant since this Latin author and commentator notes that a learned man of Athens, after being struck on the head by a stone, lost his memory of letters, to which he had been particularly devoted, but retained his memory of everything else. This is perhaps the earliest reference to a traumatic alexia sometimes referred to as Acquired Dyslexia, to be found in the Western literature.

Trousseau (1931) quotes Pliny (A.D. 23-79) to illustrate the thesis that "the physiological conditions of aphasia" were not unknown in antiquity. Pliny in his Natural History (Book XXIV) stressed the vulnerability of man's faculty of memory, by giving examples of men forgetting how to read and write, forgetting relatives and friends, and even a case of forgetting his own name. Aristotle in his "problemata" saw the crucial difference between man and animals, being that only man was endowed with rational speech. The discussion concerning hesitancy in speech strongly suggests in Critchley's (1959) view, that "Aristotle's 'hesitation' of speech is actually dysphasia."

Galen (A.D. 130-201) was a most influential ancient physician, rivalling Hippocrates, and unequalled as an anatomist until the work of Vesalius (1514-64). Magoun (1959) put this philosophy in perspective.

"Alexandrian medicine, which had contributed to Galen's training, had delineated the three-chambered plan of anterior, middle and posterior cerebral ventricles. As the repository of the animal spirits, these cavities became the most significant structures in the head and were often the only ones depicted in manuscript and early printed figures. Galen studied the ventricles and other neural structures by active dissection and was impressed by the partial division of the brain at the tentorium cerebelli. He traced sensory nerves of the head to connections in front of this partition and motor nerves to the attachment with the brain behind it. These observations led Galen to distinguish an anteriorly situated information collecting, or sensory, part of the brain, from an executive, or motor, part lying posteriorly."

A major difficulty in understanding the earlier records has been the difference in terminology used, and in the translation. In the translation of the writings of the Hippocratic school the term "aphonia" - most commonly in the adjective form "Aphonos", is rendered in its English translation by Adams (1939) and by Jones (1931) as "speechless", "loss of speech" or "loss of power of speech". More recently Chadwick & Mann (1950) have used "loss of voice" and in other cases "aphasia". It is of interest, therefore, to find from the writings of Soranus of Ephesus (A.D. 98-135) which are known to us through the writings of Caelius Arelanus, (Drabkin 1950) a distinction was made between cases of loss of speech due to paralysis

of the tongue, and those due to other causes where the tongue does not lose sensation or mobility.

Critchley (1959) suggests the account mentioned by the Venerable Bede (AD 673-735) where a dumb man was cured, is what must be the first account of speech therapy as opposed to miraculous intervention. Other references include the writings of Opicinus (1296) whose erratic writing Critchley (1959) suggests may have been but a reflection of a schizophrenic thought-disorder.

The Middle Ages

Ebstein (1915) calls attention to the fact that Paracelsus (1493-1541) was apparently well aware of a relationship between paralysis and speech disturbances to disease of the brain. Paracelsus is credited with pointing out that deficits of speech, as well as hearing and vision, could occur in the absence of paralysis.

Among the Renaissance descriptions is to be found the first account, by Nicolo Massa (c. 1569), of curing traumatic aphasia by surgical intervention:

"Also restored to health by my efforts was a handsome young man, Marcus Goro, who was wounded by the sharp point of a spear having on one side an axe and on the other a sword, which they called a Halberd. There was a fracture not only of the cranial bone but also of the meninges and the brain substance extending to the basal bone. Because this was protruding, a silver tube, which extended to the basal bone and exerted pressure on it, was placed in the wound. In addition to all his other misfortunes, the young man was speechless for eight days. Asked by many distinguished officials, I came there and noted that ... the

fracture of the bone was about the length of the external ear, a half-finger deep and equally wide ... Since the doctors declared that they had seen no bone, I concluded that the reason for the loss of voice was that part of the bone was lodged in the brain. I took an instrument from a certain surgeon who was in attendance and extracted the bone from the wound, whereupon the patient began to speak at once, saying: 'Praise God, I am cured'. This drew much applause from the doctors, nobles and attendants, who were present."

quoted in Soury (1899) and
Benton & Joynt (1960).

Soury (1899) also mentions a second case, this time involving the Spanish surgeon Arceo, who reflected the bone fragments back into place after a workman had been struck on the head by a falling stone, with similar success. Trousseau (1931) quotes a further example of an early physical appreciation of the essential nature of aphasia. In his lecture Trousseau quotes the following passage from Schrenck von Grafenberg's "Observations" (1585):

"I have observed in many cases of apoplexy, lethargy and similar major diseases of the brain, that although the tongue was not paralysed, the patient could not speak because with the faculty of memory being abolished, the words were not produced."

An often quoted early example of dyslexia is the case of Leonardo da Vinci (1452-1519). This claim is based on the 'mirror writing' seen in many of da Vinci's works. However, alternative explanations have been advanced to account for this, notably that this was a form of code, to avoid religious persecution. Vasari (1550) records charges of apostasy from Christianity being brought against da Vinci. Freud (1910) suggested fixations of a psychosexual nature (especially about the symbolic vulture) which might explain another reason for the deliberate adoption of the use of

codes. Critchley (1928), although an advocate of the concept of dyslexia, in his study of 'mirror-writing', came to the conclusion that this evidence is not conclusive. Leonardo da Vinci always wrote left-handed, and since he painted right-handed, this may be seen as supporting the 'motor' hypothesis advanced by Erlenmeyer (1879) that the natural movement of one hand is the mirrored replica of those of the opposite hand.

Critchley (1959) has concluded that the earliest example of 'dyslexic' type disability is to be found at this time, i.e. the early 16th century.

"The writings of St. Teresa of Jesus (1515-1582) here and there show traces of an inability to comprehend written and printed symbols, or what we would nowadays be tempted to regard as dyslexic."

Two major references occurred in the latter part of the 17th century. Critchley (1950) refers to the report by Patrick Blain, who in 1673 described the case of a man who, after apoplexy, had lost the power of reading, though not of writing, "it was as if he wrote with his eyes shut". A more detailed observation was made in 1673 by Johan Schmidt, and published three years later in the "Miscellance of the Academia Naturae Curiosorum of Leipzig". The following translation is found in Benton & Joynt (1960):

"On loss of Reading Ability Following Apoplexy with Preservation of Writing.

A leading citizen among us, Nicholas Cambier, an old man of 65 years, was seized with a very severe attack of apoplexy which all his attendants feared would lead to his death. Many remedies were applied, including copious venesection, irritating enemas to stimulate the sleeping faculties, cupping with deep incisions of the scapular and nuchal regions, together with inunction of the neck, forehead and nose, and, from time to time, essences and spirits for

the head to the degree that his condition would permit.

Upon his return home, it was evident that his right side was paralyzed and that he had difficulty in speaking. He muttered a good deal but was incapable of expressing his feelings of his mind; he substituted one word for another so that his attendants had difficulty in determining what he wanted. He then developed epilepsy with severe convulsions; this disappeared and he returned to his former state. Thus was the wretched man tortured.

Finally, by the goodness of God, these terrible enemies were overcome. At no time had they carried the threat of immediate death.

A final evil remained to be overcome. He could not read written characters, much less combine them in any way. He did not know a single letter nor could he distinguish one from another. But it is remarkable that, if some name were given to him to be written, he could write it readily, spelling it correctly. However, he could not read what he had written even though it was in his own hand. Nor could he distinguish or identify the characters. For if he were asked what letter this or that was or how the letters had been combined, he could only answer by chance or through his habit of writing. It appeared that he wrote without deliberation. No teaching or guidance was successful in inculcating recognition of letters in him.

It was otherwise with a certain stone cutter in our country. Willhelm Richter came to see me after his apoplexy receded because he was not able to read at all or to recognise letters. However, he learned the alphabetic elements of the language again in a short time. He then combined them and attained perfection in his reading."

This case report provides the first unmistakable descriptions of paraphasia and alexia. Schmidt (1676) takes pains, by a comparison of his two cases, to show that the course of an acquired impediment in reading can vary. In his brief discussion following the case reports, Schmidt mentions the patient's inability to read script which he himself had just written as being the most 'memorable' feature of his first case. This phenomenon has been

repeatedly observed since his time and its significance is still a subject of lively interest.

In 1683 Peter Rommel recorded what Benton & Joynt (1960) feel should be given the credit as being the first descriptive analysis of the aphasic profile. In Rommel's (1683) account of what he called Rare Aphonia, he recounts the case of a woman who suffered mild apoplexy and paralysis of the right side. She lost all her speech with the exceptions of the words 'yes' and 'and'. The exception to this was her ability to recite verbatim the Lord's Prayer and some biblical verses. He tested her memory which proved to be excellent as was her ability to understand oral and written language.

In the latter part of the 17th century there are several records of outstanding personalities of that time having lost their ability to speak as a terminal event. William Harvey in 1657 experienced a fading out of his power of articulation, and Thomas Hobbes in 1679, a week before his death, lost his speech and strength of his right side. Dean Swift experienced a speech disorder in the latter stages of his illness (1745), sometimes being unable to utter a syllable, and at other times incoherent. Occasionally Swift's silence would be interrupted by unexpected and incongruous phrases, reminiscent of the 'occasional utterance' of aphasics.

Marshall d'Harcourt, the diplomatist and military leader, lost the power of speech in 1718. As a result "he would indicate with a pinter the letters of a large alphabet which were set before him and which an ever watchful secretary would accordingly write and form into words. He would do this with all the impatience and despair

imaginable." Van Swieten referred to having seen several cases where patients could not find the correct name to designate objects. Those unfortunate people would try to use their hands, feet and whole body to explain what they wanted. In 1745 Linne published a case where the patient lost "first the memory of all nouns and, secondly, the ability to express nouns". In the same year (1745) Ulof Dalin called attention to the case of a "mute who can sing". The description is similar to that given by Rommel with the patient losing the ability to speak all but the word 'yes', yet retaining the ability to sing certain hymns which he had learnt before he became ill.

From a medical view, there were several noteworthy features of Morgagni's work (1762). Firstly, the frequency with which he pointed out that the patient could not talk although he retained the ability to understand the spoken language. Many of his clinical descriptions were supported by the findings of autopsy. Morgagni amassed considerable evidence in support of the association between paralysis of one side of the body and the presence of the disease in the opposite cerebral hemisphere. Ebstein (1915) concludes that Morgagni had established the relationship between aphasia, right hemiplegia and disease of the left cerebral hemisphere.

The writings of Johann Gesner (1770) include cases of particular interest. The first was a case of a man who suffered from what is now called 'jargon aphasia'.

"He articulated fluently but uttered incomprehensible neologisms. He had no paralysis but did show a slight unsteadiness in gait. He also wrote jargon and his written words corresponded phonetically to the words as

pronounced. He could not write his name nor could he read. Nevertheless, it was evident that he was not grossly demented and retained his understanding of objects in the environment. He was aware of the fact that he was speaking jargon."

The second case summarised a description of a case in which, following an illness, the patient showed a pronounced memory impairment. He could not read although his vision was unimpaired. He often wrote lines and even whole paragraphs in an elegant hand, yet what he wrote made no sense. In the last case, the man could recognise objects but could not read. In due time he partially regained the ability to read, the degree of recovery being greater for Latin than Greek.

The last case involved a teacher who, after a severe stroke, found that although he recognised words, he invariably mis-spoke them when he read them aloud. He was aware of his difficulty and remarked "I know this letter and realise that I have seen it and spoken it countless times, yet when I want to say it aloud, I say something else. This has made me so disturbed and bitter that I do not attempt it any more".

It is appropriate at this point to include mention of the eminent Scottish surgeon, John Hunter (1728-1793), who, according to the extracts quoted by Adams (1979), experienced difficulties in his childhood similar to those recorded by people who today might be described as dyslexic. One report mentions that he:-

"could not be taught to read but with the greatest difficulty, and long after the age when other children read English fluently and have even made some progress in Latin. However, great as his aversion was to his book,

and though retaining long past the age when such things are tolerated that childish habit of crying, when occasion called upon him he was bold and intrepid."

Adams (1979) goes on to quote Dr. A.H.H. Sinclair who wrote:

"only in the light of knowledge which was not possessed until 150 years later, could the true nature of John Hunter's disability have been recognised as an example of developmental aphasia."

Hoff, Guillemin & Gedds (1958) translated an account of self-observed transitory aphasia. Grand Jean de Fouchy, in 1783, wrote:

"Toward the end of dinner, I felt a little increase of pain above the left eye, and in that very instant I became unable to pronounce the words that I wanted. I heard what was said, and I thought of what I ought to reply, but I spoke other words than those which would express my thoughts, or if I began them I did not complete them, and I substituted other words for them. I had nevertheless all movements as freely as usual ... I saw all objects clearly, I heard distinctly what was being said, and the organs of thought were, it seemed to me, in a natural state. This sort of paroxysm lasted almost a minute."

In the same year (1783) Johann J. Spalding, who was an eminent German theologian, described his experience of an episode of paraphasia and dysgraphia. Eliasberg (1950) in his translation, published in an article on the Prehistory of Aphasia, describes how Spalding related that following a rather busy morning, he had begun to write a receipt for some monies received and discovered that he could not continue after having written the first two words, "for I could not recollect the words which belonged to the ideas I had in mind". Exerting every effort, he started to write again slowly and deliberately, only to find that he was writing words other than those intended. Turning to

the person who was waiting for the receipt, he could not express himself clearly but managed by a combination of monosyllables and gestures to get him to understand that he was not to wait for the receipt. There followed "a tumultuous disorder in my senses, in which I was incapable of remarking anything in particular, except that one series of ideas forced themselves involuntarily on my mind ... I endeavoured to speak in order to discover whether I was capable of saying anything that was connected, but although I made the greatest efforts of attention, and proceeded with the utmost caution, I perceived that I uniformly spoke other words than those I intended. My mind was as little master of the organs of speech as it had been before of my hand in writing."

According to Spalding's estimate, this state of affairs lasted about half an hour and was followed by a period of about the same duration during which he felt constrained to speak slowly and deliberately. By afternoon he was sufficiently recovered to be able to write the description which was subsequently published.

Many writers (Ogle 1874, Benton & Joynt 1960) include reference to the personal account of the disturbances that followed a stroke which afflicted Dr. Samuel Johnson when aged 74 in the year 1783. In a letter to a friend (Chapman 1952) he recalls losing his speech but being pleased to find that he still had the use of his hand. "My first note was necessarily to my servant, who came in talking and could not immediately comprehend why he should read what I put into his hands. I then wrote a card to Mr. Allen that I might have a discreet friend to hand, to act as occasion should require. In penning.

this note I had some difficulty as my hand, I knew not how or why, made wrong letters." Over the next few weeks Johnson continued to send his friends' accounts of his illness and its effects, and an inspection of these manuscripts demonstrates the dysgraphic errors.

Many cases are described clearly enough to be identified as suffering from what today is called motor aphasia. However, this incapacity of a patient to express himself in words can take other forms. Crichton (1798) put forward a concept of "a very singular defect of memory", which "ought rather to be considered as a defect of that principle, by which ideas, and their proper expressions, are associated, than of memory; for it consists in this, that the person, although he has a distinct notion of what he means to say, cannot pronounce the words which ought to characterise his thoughts". A case which Crichton quoted (and which Forbes Winslow in 1868 also quoted) concerned Marcus Herz, who was visited a year after the initial attack:

"I found him so much recovered, but in regard to his speech, the following very remarkable circumstance was to be observed. He was unable to articulate distinctly any words which either occurred to him spontaneously, or when they were slowly and loudly repeated to him. He strenuously exerted himself to speak, but an unintelligible kind of murmur was all that could be heard. The effort he made was violent and terminated in a deep sigh. On the other hand, he could read aloud with facility. If a book, or any written paper, was held before his eyes, he could read so quickly and distinctly that it was impossible to observe that there was the slightest fault in his organs of speech. But if the book or paper was withdrawn, he was then totally incapable of pronouncing one of the words which he had read an instant before."

Crichton (1798).

Summary

In this survey of historical accounts, it is evident that the majority of clinical cases involved the power of speech, and very few dealt with written language skills. All these cases dealt with the loss of ability as a result of insult to the brain. As Critchley (1950) points out, no clear distinction was made between such diverse clinical symptoms as mental disease, hysterical afflictions, faulty articulation and aphasia proper.

The descriptions before 1800 do, however, include almost all clinical forms of aphasia, complete motor aphasia, paraphasia, jargon aphasia, agraphia and alexia. The only major form of aphasia that seems to be missed is sensory aphasia in the form of impairment in the comprehension of oral speech.

The earliest psychopathological interpretations were that motor aphasia was due to paraphasia of the tongue. Where the tongue and other peripheral speech organs were not impaired, recourse was made to a global explanation in terms of a complete or partial loss of memory. Gesner (1770) advanced a more specific conception, that paraphasia and jargon aphasia were due to an interruption in the connections between an image or idea and its expressive linguistic signs.

Many reports included observations of the clinical combination of aphasia and dextral paralysis. It was not until Broca's demonstrations and the work of Marc Dax in the 19th century that there was a general recognition of this link.

The 19th Century

The earliest survey of the literature concerning aphasia in the past 2,000 years has shown little more than a steady increase in the number and detail of clinical observations. The 19th century was to change all that; science and the growth of human knowledge underwent radical changes in the same way that social and economic institutions changed. The scientific study of disordered language really dates from the clinical physiological writings of Gall early in the 19th century. Gall, who had studied medicine in Strasbourg, eventually settled in Vienna, and from 1796 to the end of 1801 lectured widely on his new theory of the functions of the brain. His argument had considerable impact on the discussion between those who believed that the cerebral hemispheres functioned as a whole, and those who contended that there was localisation of function in the cerebrum. The teaching of Flourens (1824), that all parts of the cerebrum were equipotential, was countered by Gall (1808) who suggested that the apparently uniform mass was made up of organs which subserved the manifestations of the vital and moral faculties of man. Gall's views, however, were considered so subversive of religion and morals that in December 1810 his lectures were forbidden by an autographed letter from the Kaiser. Although Gall's name is habitually linked with the development of phrenology, he was the first man to insist that the brain should be examined anatomically from the spinal cord upwards. He laid down that the functions of the brain could only be explained by considering their relation to those of the spinal cord.

A description by Gall of his views was contained in Wieland's "Der neur Teutesche Mercur" (1798); an open letter by Charles Villers, published in 1802, contained Gall's main doctrines which suggested the brain was made up of organs serving three distinct faculties:

- 1) Those which concern purely the exercise of vital force;
- 2) The inclinations and affections of the soul;
- 3) The intellectual qualities of the mind.

Gall and Spurzheim in 1809 published details of their research, from which it would seem that the concept of localisation dated back to Gall's (1810-19) earliest years, for as a boy he had noticed that his companions who had prominent eyes had a gift for languages and memory for words. He therefore concluded that parts of the brain which pushed the eyes forward must be associated with the different varieties of verbal memory. He is also credited as having pointed out that injuries to the head showed that the mind was associated with the brain, and that the brain served the organs of intellectual life.

On the basis of examinations of the brains from patients who had loss of speech, Bouillaud (1825) maintained that the cerebral control of movements necessary for speech resided in the frontal lobes, and he thus supported Gall. Bouillaud was appointed Professor of Clinical Medicine in 1831, and following Gall's death in 1828, he continued to champion Gall's theories. Bouillard held so forcefully to this view that in 1839, when addressing the Academie de Medecine, he was so stung by criticism that he offered to forfeit 500 francs to anyone who would produce the

brain of one who had during life lost speech, and which did not show any frontal lobe lesion. Velpeau seems to have been the only physician with sufficient temerity to claim this prize. In 1843 he described the case of a bifrontal scirrhous tumour of the brain, the patient during life having been not only non-aphasic, but actually loquacious. Bouillaud and his son-in-law Auburtin, seem to have been unaware of the work of Marc Dax of Montpellier. In a paper read before the Congress Meridional in 1836, Dax claimed to have deduced as early as 1800 that when verbal memory was impaired, the difficulty would be found in lesions which ablated the faculty of speech, and were always located in the left side. This deduction had been based on the case of a cavalry officer who Dax had seen in 1800 following a sabre wound to the left periatal region of the skull. Six other cases came his way in the following years so that by 1836 he had seen more than 40 comparable cases and had collected a similar number from the literature, especially the writings of Morgagni and of Nanduyt. However, the work of Dax remained largely unknown, until it was published in 1865, when it became the centre of controversy, since Broca, who was then the head of the surgical unit at Bicetre, claimed the credit since he had demonstrated a brain at the Societe d'Anthropologie in 1861, which showed destruction of the posterior part of the second and third frontal convolutions.

Broca (1888) is commonly credited with being the first person to point out that damage to a specific portion of the brain results in disturbance of language output. In November of 1861, Broca encountered his second case, the

more famous one of an old man called Lelong. Lelong had sustained an impairment of speech which meant that although unable to speak, he had a high stock of gestures which he employed with animation. The eventual dissection of the brain revealed atrophy of the left hemisphere, coupled with a cortical excavation extending from the Sylvian Fissure forward, incorporating the lower part of F2 and F3. This part which Broca identified, is now called Broca's area and lies immediately in front of the portion of the motor cortex that controls the muscles of the face, jaw, tongue, palate and larynx (Head 1921, Zangwill 1960, Penfield & Roberts 1959). Broca (1861) discovered a clinical condition, which he called 'Aphemia' produced by destruction of the substance of the brain. He believed that he had found the seat of the faculty of articulated language. Broca stated that the fundamentals of speech consisted of (1) an idea; (2) connection with the convention that had been established between ideas and words; (3) the art of combining movements of the organs of articulation with the suitable words; (4) the use of the organs of articulation.

In 1853 a Dublin otologist, William Wilde, published his observations on children who were 'dumb but not deaf'. Many eminent men became concerned with topics relating to affectations of speech. The clinical teacher, Prof. Trousseau (1931), who presented his famous lecture at the Hotel Dieu on the subject in 1864, not only rejected Broca's term 'Aphemia' and the even earlier expression of 'Alalia', but introduced the word we now use, 'Aphasia'. This word had been contrived with the assistance of his

friend M. Chrysapis who was a Greek scholar. Trousseau demonstrated many cases of acquired speech disorder, and some of his clinical observations were particularly shrewd. Thus, he anticipated Jackson (1915) in describing recurrent utterances, and he described Alexia before Broadbent (1879).

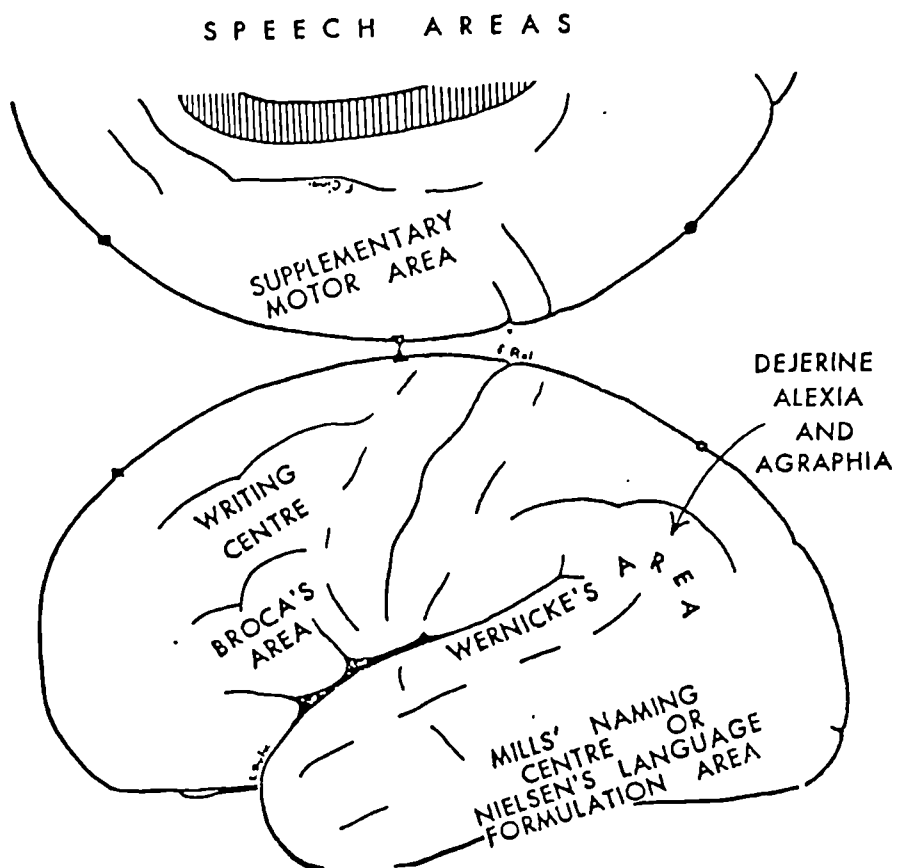
Interest in the question of localisation of speech rapidly spread to England, and in 1864 Hughlings Jackson published his first paper on "Loss of Speech with Hemiplegia of the Left Side". In 1868 the British Association for the Advancement of Science held its annual meeting at Norwich, and Broca opened a discussion on Aphasia and was followed by Jackson. Broca (1868) divided affectations of speech into two main groups: "Aphemie" and "Amnesie Verbale". The loss of conventional connections between the idea and the word was the Amnesie Verbale. The loss of the art of combining movements of organs of articulation with suitable words was referred to as Aphemie. Hughlings Jackson's (1868) contribution was of a different type, as it dealt with the psychological aspects and he pointed out that healthy language consisted of two inseparable, yet distinct forms:

- (1) intellectual, i.e. the power to convey propositions;
- (2) emotional, i.e. the ability to exhibit states of feeling.

These two he claimed were separated by disease. "The question is not how is the general mind damaged, but what aspect of the mind is damaged?" Thus we see one of the earlier distinctions becoming evident between the clinical acumen of Broca, and the psychological insight of Jackson.

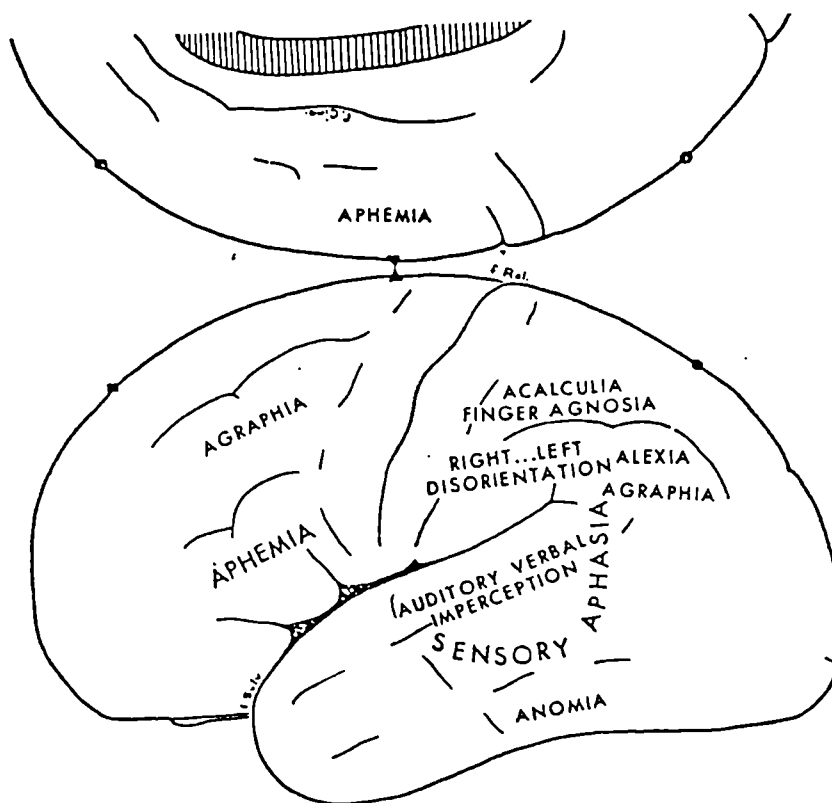
In 1867 Ogle published a case of a man who could write things that he could not say, thus suggesting that writing

Figure 1



After Penfield and Roberts (1959).

Figure 2



Summary of the location of the lesion which could produce various disorders of speech as noted in the literature.

is separate from speech, and introducing the term "Agraphia" which is applied to patients who are unable to write.

The British surgeon Bastian, began writing on Aphasia in 1869 and continued for some 30 years. Penfield & Roberts (1959) and Head (1926) credit Bastian as being the first person to describe "word-deafness" and "word-blindness". The former was supposed to be a condition in which the patient had no difficulty in hearing but was unable to recognise words as such, and the latter was a similar condition in which the patient was able to see normally but could not recognise a word. Critchley in his 1959 paper, and Thompson (1966) both endorse Bastian's claim to have been the first person to foretell sensory aphasia. The fact that Bastian's influential paper of 1869 seems to be so rarely quoted in the literature is most forcefully brought home by the criticism of de Watteville in 1885 when commenting on the work of Bernard (1885) in which he says:

"The history of the varieties of Aphasia called 'sensorial', is not by any means complete. This is no doubt owing to the fact that, the author, who appears to have been master of the French language only, has been unable to avail himself of the writings of foreign authors. We regret the fact, for the history of verbal deafness could have offered him ample scope for vindicating unrecognised claims. We allude chiefly to the strange neglect with which Dr. Bastian's remarkable paper, published 16 years ago, has been allowed to lapse ... Wernick (1874) and Kussmaul (1877) are everywhere mentioned as having been the first to describe sensorial aphasia. And yet we find the English author expressing himself on the subject in no uncertain or ambiguous terms. He divides cases of Aphasia into four categories ... Aphasia proper, Aphemia, Agraphia and Amnesia."

De Watteville concludes that to Bastian belongs the undoubted credit for having been the first not only to speak of cortical sensorial centres, but also to draw the vital distinction between motor and sensorial, and between the central and commissural Aphasia. Bastian himself was very aware of the neglect that his 1869 article had received, and in 1898 in his book "Aphasia and other Speech Defects", he wrote that: "although De Watteville had previously pointed out that I had five years before the appearance of Wernicke's memoir, fully appreciated the nature of the defects 'Word-deafness' as well as 'word-blindness'".

In support of the claims made by and for Bastian, the following quote is taken from Bastian (1869):

"On the Various Forms of Loss of Speech in Cerebral Diseases.

And where the individual cannot read, I am inclined to think this must be owing to either some lesion of the afferent fibres to the visual perceptive centre, of the visual perceptive centre itself, or of the communications between the cells of this centre and those of the auditory perceptive centre. If lesions exist in either of the first two situations the visual impression could not receive its intellectual elaboration, and consequently, it could not call up its associated sound (word) in the auditory centres, and hence no meaning would be conveyed by the hieroglyphic marks of the printed or written passages. They would be to the person mere meaningless strokes, just as we have assumed that if similar defects exist in the auditory perceptive centres, or in the afferent fibres with which they were connected, the individual could not appreciate the meaning of spoken words - these would be to him mere sounds."

Head (1920) took a critical view of Bastian's work, suggesting that it had "an evil influence on the subsequent course of discussion". This was because Head believed that Bastian started from an a priori assumption that we think in words,

and that words are received in the cerebral hemisphere as remembered sounds. However, the main criticism Head makes, is that Bastian in his 1880 work was one of the first of what Head (1926) refers to as "the diagram makers". Wepman (1951) was more impressed, describing Bastian as one of the first to illustrate his text with diagrams. Bastian's (1898) book was little more than a widely expanded version of the original paper, (Bastian 1869) with as a front piece, the now famous diagram often cited in subsequent discussions. Head (1926) suggests that by its simplicity and dogmatism it seduced many of the younger generation away from the difficulties and complexities of Jackson's doctrine.

Bastian has been rather neglected because of the axiom that "we think in words", but he is of importance for three reasons. Firstly, that he worked in London and was writing in English, secondly, that he was the first to describe sensory aphasia and "word-blindness" and "word-deafness", and lastly, that he was a major influence in the psychological aspects which Hughlings Jackson's insight initiated.

In 1874 Wernicke published an important monograph in which he described cases of sensory aphasia, with lack of visual and auditory recognition of speech, as well as "conduction aphasia". Wernicke separated the general auditory area of the brain from the auditory speech area and located the latter in the first temporal convolution. A lesion in the auditory speech area would produce loss of understanding speech, there would be difficulty in naming and in speaking, as one could not understand in order to correct the mistakes. In addition, the patient would have

Figure 3

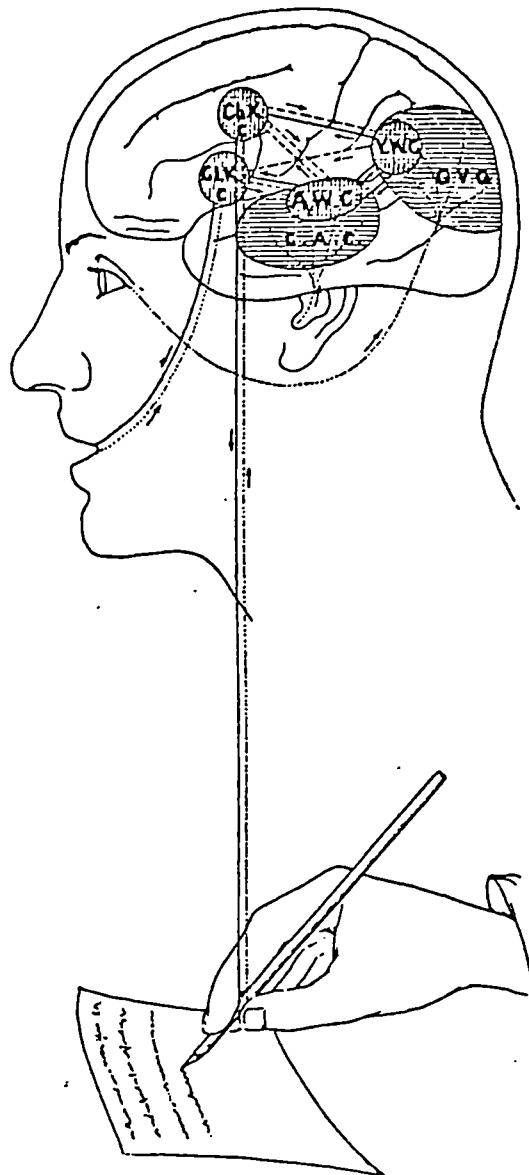


DIAGRAM SHOWING WORD CENTRES AND COMMISSURES OF THE LEFT
CEREBRAL HEMISPHERE, TOGETHER WITH AFFERENT AND
EFFERENT PATHS.

From Bastian (1898)

inability to read and to write, due to the learning process of hearing words while reading and writing (remembering that in those days people read out loud and it was thought that a patient would only be able to read silently to themselves if already well educated). In the ten cases that Wernicke presented, he was satisfied that there was an auditory word centre and that this was located in the first temporal convolution.

Kussmaul is generally credited as being the first person to introduce the actual terms "word-deafness" and "word-blindness". He was certainly desirous of making "word-deafness" and "word-blindness" understood as separate entities from aphasia.

"We have discovered cases in the literature, which were known as aphasia, but should not be designated as such, inasmuch as the patients were able to express themselves in speaking and writing. They were neither inarticulate (incapable of speech), nor illiterate (incapable of writing), but despite an acute sense of hearing they could no longer comprehend words they heard or, despite good vision, they could no longer read words they saw. For the sake of brevity these pathological disabilities are named ... word-deafness and word-blindness. (Caecitas et Surditas verbalis)."

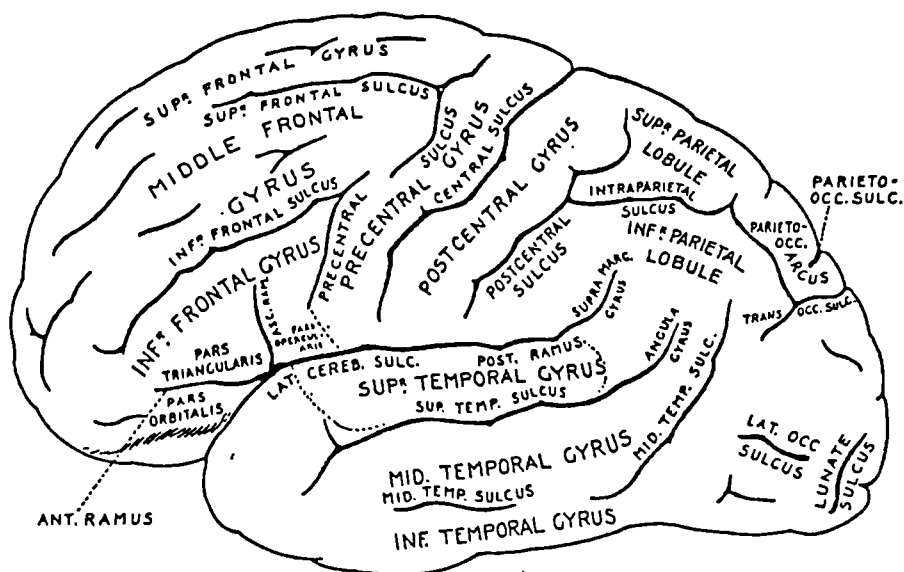
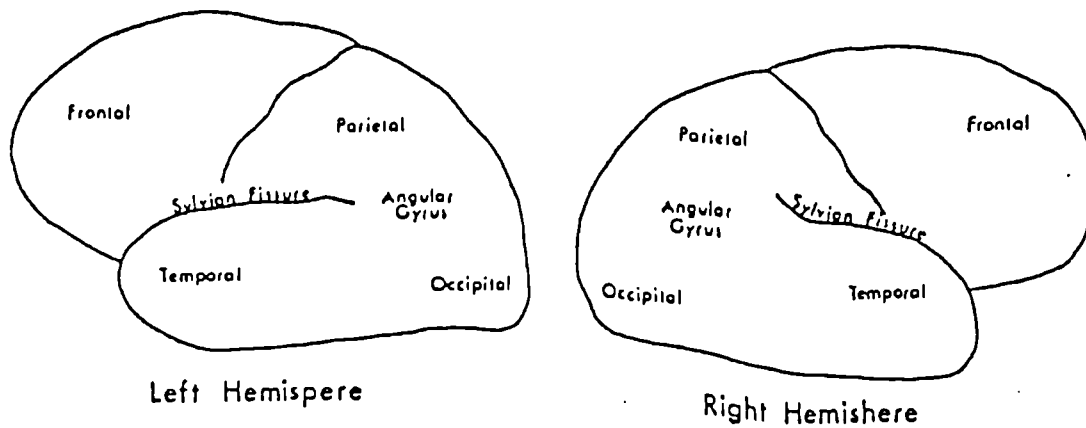
A. Kussmaul p.770, 1878.

Kussmaul (1878) criticises Wernicke's (1874) diagram as very complicated, and this was not as well received as that of Broadbent (1878) which included naming and proportionising centres as well as the visual, tactile, auditory and speech centres; or that of Lichtheim (1885) with its visual, auditory, writing, motor and multiple concept centres.

At this time, some influential experiments with animals were carried out, notably by Ferrier (1886) who, in 1873

Figure 4

Cerebral hemispheres.



The lateral aspect of the superolateral surface of the left cerebral hemisphere.

From Gray's Anatomy (1973).

localised the auditory centre in animals in the temporal lobe. Munk (1877) determined the visual cortex to be in occipital region of animals and demonstrated "mind-blindness". These animal experiments had profound effects on clinical interpretations. In 1881 Dejerine stated that word-blindness was due to a lesion of the angular gyrus, and he later maintained that a lesion of the angular gyrus produced word-blindness, total agraphia and paraphasia (Dejerine 1892). Geschwind (1962) describes Dejerine's paper as the first to isolate the condition of "pure word-blindness without agraphia".

The word "Dyslexia" was first suggested by Professor Berlin of Stuttgart in 1887 in his monograph "Eine besondere Art der Wortblindheit (Dyslexia)", based on several case histories concerning adults who could only read three to five words.

Miles (1974) gives the Greek root of the word Dyslexia as being "dys", meaning difficulty with, and "lexis" connected with the root "logos" meaning something like "a language, speech or diction". Confusion has arisen, however, because people have associated it with the Latin word "lego", meaning "read" and have therefore assumed wrongly that Dyslexia means "difficulty with reading".

Wagner (1973) in his biography of Berlin makes it clear that Berlin viewed Dyslexia as a form of aphasia. Although Dyslexia was originally a Germanic term, Klasen (1972) tells us that the term is rarely used today in German speaking countries; it has been replaced by the term "Legasthenie" which equals "Legasthenia" or "Reading Weakness".

Sanguel (1974) points out that the condition is often known as "Specific" or "Developmental Dyslexia". It

is "specific" in so far that it is independent of intelligence or memory in general, and it is "developmental" in so far as it bears upon the acquisition of reading and spelling skills, rather than upon breakdown of these skills after they have been acquired.

Critchley (1964) records one of the most impressive first hand accounts of what it was like to experience the loss of the ability to read. The retrospective account written by Professor Laudat of Montpellier in 1834 after his recovery from speech disorder in 1825, affords a vivid description of his failure to make sense out of printed symbols.

"Whilst retaining the memory for the significance of words heard," so he explained, "I had lost that of their visible signs. Syntax had disappeared along with the words, the alphabet alone was left to me, but the function of the letters for the formation of words was study yet to be made. When I wished to glance over the book which I was reading when my malady overcame me, I found it impossible to read the title. I shall not speak to you of my despair, you can imagine it. I had to spell out slowly most of the words, and I can tell you, by the way, how much I realised the absurdity of the spelling of our language. After several weeks of profound sadness and resignation, I discovered whilst looking from a distance at the back of one of the volumes in my library, that I was reading accurately the title Hippocratis Opera. This discovery caused me, to shed tears of joy."

Broadbent (1872) described the case of a man who had been knocked down in the street and had been taken to the casualty department of St. Mary's Hospital, London. The injured man could not express himself very well and pointed to some printed words on the wall, and said "I can see them, but cannot understand them".

In an article entitled "The Forgotten Lesson Of Monsieur C", Gardner (1973) recounts the interesting case which led

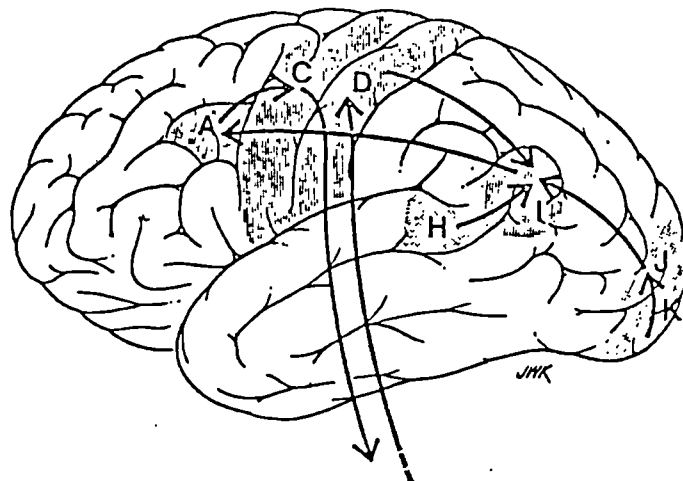
Dejerine in his 1892 paper to describe a classic case of a man who had lost the ability to read even though he had normal visual acuity and could copy written words. In October, 1887, Monsieur C. experienced several attacks of numbness in his right leg and some feebleness in his arms, and a little trouble in speaking. When he discovered he was unable to read, he made an appointment to see his Ophthalmologist to be fitted with more adequate glasses. Much to Monsieur C.'s surprise, his Ophthalmologist did not prescribe a new pair of glasses, but referred him to Dejerine, a neurologist at Bicetre in Paris. They concluded that C. had suffered a relatively rare type of stroke which made it impossible for him to see objects in one half of his visual field, and destroyed his capacity to read, but affected little else. It was noticed while observing C. that he did not understand letters as graphic units and C. protested that he knew the signs were letters even though he could not identify them. The meanings of words were also lost to him, although again, he could copy perfectly. He was still able to write without difficulty, both expressing his thoughts spontaneously and transcribing what was dictated to him. Yet, he failed when he tried to decipher his own penmanship, unless he could remember what he had written. In fact, he preferred to write with his eyes shut, for he got "tangled" if he monitored his own writing. Following a post-mortem on Monsieur C.'s brain, it was shown that the left visual cortex and splenium were destroyed as a result of occlusion of the left posterior cerebral artery. The man's left visual cortex was inoperative, making him blind in his right visual field.

Words in his left visual field were properly received by his right visual cortex, but could not cross over to the language area in the left hemisphere because of the damaged splenium. Thus words seen by the man remained as meaningless patterns.

In the last decade of the nineteenth century, there was a sudden upsurge in interest. The work of the Glasgow Ophthalmologist, James Hinshelwood, is notable in that it is often used as the first reference point in text books, but it is also the initial paper in what is often thought of as the British contribution to the literature. Hinshelwood in his paper entitled "Word-Blindness and Visual Memory" dated 1895, states:

"He first came to my notice on August 29th, 1894, and gave me the following history. About one month previously, he was greatly startled to find that one morning in his own house he could not read the French exercise which a pupil gave him to correct. On the previous day he had read and corrected the exercise just as usual. Greatly puzzled, he went into an adjoining room, and having summoned his wife, he asked her if she could read the exercise. She read it without the slightest difficulty. He took up a printed book to see if he could read it, and found that he could not read a single word. On examining his visual acuity with the test types, I found that he was unable to read even the largest letters of the test types. He informed me that he could see all the letters plainly and distinctly, but he could not say what they were. He made the most absurd mistakes, and only very rarely, after guessing several times, did he hit upon the proper name of the letter. What attracted my special attention was that he read at once the number of each paragraph standing at the top of the test types. I found on examining him further with figures that he did not experience the slightest difficulty in reading any number of figures quite fluently and without making any mistakes whatever ... His inability to read was thus manifestly not due to any failure of visual power, but to a loss of visual memory for letters."

Areas of the brain associated with written language.



Schematic diagram of essential components of written language. The visual patterns of the written symbols are perceived in the primary visual area K and analysed in the adjacent visual association area J. In area I, they become associated with the sound of the word or letter analysed in the auditory association area H. Note also that this centre for written language is just posterior to the angular gyrus, which is the area for spoken language.

As is also the case with spoken language there is a direct outflow to the frontal lobe A which controls the movements of writing through the motor area C. Again, there is feedback to the sensory area D from the muscles and joints involved in writing. Thus within these closely integrated structures there develop the multisensory motor patterns of neural activity that underlie writing

From Masland (1981).

In this same article Hinshelwood displays a broad understanding of continental literature on the subject, although having omitted reference to Bastian, and concludes, "there are different forms of word-blindness which must be carefully distinguished from one another". As an example in support of this assertion he quoted Mierzejewski who is reported by Berger (1892) as having described a form of word-blindness where the patient could recognise the individual letters and name them, but could not unite them into syllables or words.

Pringle Morgan (1896) was the first person to point out that in addition to word-blindness resulting from acquired cerebral lesions, there was a separate entity which he termed congenital word-blindness. In his article in November of that year, entitled "A Case of Congenital Word-Blindness", Pringle Morgan, a General Practitioner in Seaford, reported a paradoxical case he had seen of an intelligent 14-year old boy who was incapable of learning to read. Morgan reported the boy as having been fond of arithmetic and experiencing no difficulty with it, but having said that printed or written words "had no meaning to him". He concluded that words written or printed conveyed no meaning or impression to the boy's mind, and it was only after laboriously spelling them that he was able, by the sounds of the letters, to discover their import. Morgan concluded therefore, "it is unique, so far as I know, in that it follows upon no illness or injury, but is evidently congenital and due most probably to defective development in that region of the brain, disease of which in adults produces practically

the same symptoms - that is, the left angular gyrus."

Two weeks later, Hinshelwood was again in print, this time with a report entitled "A Case of Dyslexia ... A Peculiar Form of Word-Blindness". This report was carried by the Lancet (1896) and dealt with the case of a tailor aged 45. The tailor had been fired from his job because he had lost the ability to perform it, for having at one time been a very good workman he had been dismissed because in recent times he had failed in attempting to make garments often making absurd mistakes and sewing the wrong pieces of garment together. Although the tailor reported no difficulty in his vision nor blurring of letters, the attempt to read seemed to cost him great mental effort and the difficulty remained the same when trying to read printing or writing. Hinshelwood, who was a highly literate scholar, concluded, probably from the word of Dejerine (1892), that the tailor's problem was located in the region of the angular gyrus.

In 1896 James Kerr, Medical Officer of Health to the City of Bradford, was awarded the Howard medal by the Royal Statistical Society, for his essay on "School Hygiene and its Mental, Moral and Physical Aspects". This paper covers many environmental and health aspects and includes the following note:

"But besides the generally dull, there are the mentally exceptional, many quite suitable for ordinary school provided the teacher knows their peculiarities. Almost unique cases are found with the most bizarre defects. Agraphia, for instance, may be unintelligible to a teacher, especially if it occurs, as in one of my cases, in a boy who could do arithmetic well as long as it involves Arabic

numerals only, but writes gibberish in a neat hand for dictation exercise. A boy with word-blindness who cannot spell the separate letters, is a trouble

Summary

During the 19th century there developed clearer insight into hemispheric specialisation and the specific area of the brain which involved the language function. This was followed by writers who differentiated between the acquired and developmental cases of aphasia. Studies of functional ability recognised that a person might be able to see but still not read. From this "word-blindness", the concept of "Dyslexia", was developed. By the end of the century, clinical studies relying on accounts of patients who had suffered brain lesions, gave way to educational reports of children who failed to develop the ability to read. This distinction is of major importance, a view supported by Critchley (1962):

"There is in other words a vast difference between the breaking down of a mature linguistic faculty and the failure to develop a particular line or aspect ... The misuse of the same term "aphasia" is largely responsible for the confused thinking, and I would like to make a plea for the rejection of the term "aphasia" when applied to developmental disorders in the acquisition of one or other aspect of language."

CHAPTER 3

INTO THE 20th CENTURY

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In 1891, Sigmund Freud, then a neurologist and later a psychol-analyst, published a monograph entitled "On Aphasia". Although many other investigators have contributed to the study of aphasia (Nielson in 1936 listed 54 investigators), Freud appears to have been the first to suggest that there were individuals who showed the functional difficulties of aphasia, but for whom no focal lesions could be found (Freud 1891-1953).

Thompson (1966) considered Freud's work as "a milestone" but noted that it had received very little attention at the time of publication. More recently, others have added their support of Freud's views, notably McCready (1909/1926), Critchley (1961/64), Lenneberg (1967/1974) and Burkowsky (1973). Indeed, Thompson (1966) notes that:

"With the great concentration on the study of language disorders by many outstanding scientists during the last half of the 19th century, it seems incredible that no one advanced the idea that some people with language disturbances might just 'grow up that way' without organic insult to the brain, or without emotional basis for the disability."

Freud (1891) was critical of some authorities, in particular many of Wernicke's interpretations, but accepted the concepts formulated by Hughlings Jackson. In his discussion of the various psychological and physiological elements involved in learning to read, write and spell, Freud puts forward the view that:

"The idea, or concept, of the object is itself another complex of associations composed of the most varied visual, auditory, tactile, kinesthetic and other impressions."

Further evidence of Freud's close association with views that Jackson had advanced, was contained later in the same monograph:

"In assessing the functions of speech apparatus under pathological conditions, we are adopting as a guiding principle Hughlings Jackson's doctrine that all these modes of reaction represent instances of functional regression (disinvolution) of a highly organised apparatus, and therefore correspond to previous states of its functional development. This means that under all circumstances an arrangement of associations, which, having been acquired later, belongs to a higher level of functioning, will be lost, while an earlier and simpler one was preserved."

Freud's monograph analysed many of the important theories and findings in fields of language disorders from a neuropathological viewpoint as well as making references to philosophical and psychological concepts. It is possible through reading the monograph to find threads of some of the basic elements in his later psychoanalytic work. Stengel, who translated the monograph into English (1953), said in his introduction:

"The idea that disturbances of function similar to those caused by brain lesions occur in the healthy person under conditions of fatigue and lack of attention, was implicit in the theory of evolution and dissolution. It is therefore not surprising to find observations in this book which foreshadow important psychopathological discoveries. What Freud said about Paraphasia, i.e. the mistaken use of words, reads like a prelude to the chapter on errors and slips of the tongue in 'Psychopathology in Everyday Life'. Freud's observations on paraphasia are still up-to-date."

Pick (1913) and Head (1926) emphasised the importance of Hughlings Jackson's contribution to the study of Aphasia. Head was fortunate in that he was able to examine many casualties during Word War I using tests which he developed to investigate not only the language disturbances but also

other forms, such as those in mathematics and music. For Head, aphasia was "a disorder of symbolic formulation and expression". He insisted that the word is not the unit of speech, "not only is it impossible to break up a word into auditory and visual elements, but disease does not analyse a sentence into its grammatical and verbal constituents. We cannot assume that a sentence is strictly a unit of speech. Speech, like walking, is an act of progression." Head (1926, Volume I). Head classified the speech symptoms of aphasia into four groups. The first was Verbal Aphasia, which seems to be largely a speech condition; the second was Nominal Aphasia, which was characterised by the inability to label objects with the correct words, or to understand their meaning in the absence of the object; the third group was composed of such symptoms as jargon speaking and telegrammatic language, and these were classified as Syntactical Aphasia. Semantic Aphasia was the name given to those cases who could not appreciate the full meaning or significance of a statement or proposition.

Town (1911) in her monologue on Congenital Aphasia, takes some trouble to distinguish between adult and congenital aphasia. She describes the adult as one who has had experience of language and formed a large vocabulary, so that aphasia betrays itself in an inability to understand or record or utter once familiar words; with a child the condition is quite different, it is not failure to reproduce that is most in evidence, but the failure to retain impressions. "The child's most important concern is the acquisition of language; this is seriously interfered with and therefore the loss of impressibility is noticed

rather than the ability to recall." Town's contribution is of special interest in the trouble she takes in emphasising the difference between child and adult aphasia. Town offers a definition of Aphasia which excludes children who might be described as feeble minded, mute or idiotic. "Aphasia then is an inability, total or partial, to understand or use language in any one or all of its forms, such inability being independent of any other mental incapacities or of any deformities or disease affecting the organs of articulation." (Town, 1911). It is further pointed out that without such qualifications the concept of Aphasia is essentially a primary disturbance of the function of language, and would include secondary and far more fundamental and far-reaching mental disorders. Town (1911) quotes Binet (1908) on the subject as saying:

"A congenital aphasia implies a faulty development of the centres concerned with language, an atrophy severe enough to be clearly pathological in calibre and to present a contrast between the arrested development of the language centres and the much later development of the other centres of the same brain. This is positively the only reasonable way in which the term can be used."

Fields (1921) describes the original view of ophthalmologists and neurologists dealing with children, as suggesting that the word-blindness in children in some ways parallels the various forms of acquired aphasia met with commonly as a result of brain injury in later life.

James Hinshelwood

Farnham-Diggory (1978) suggests that the early period of Dyslexia is characterised by the works of two eminent gentlemen, the first being James Hinshelwood, a Scottish ophthalmologist with an interest in neurology; and the second being Samuel Orton, an American neurologist.

Of the three innovators quoted as writing in the last decade of the 19th century, Pringle Morgan, Hinshelwood, and Kerr, it was the work of Hinshelwood that was to have the most lasting impact. Hinshelwood went on to make a number of contributions to the literature, and was the inspiration for a large number of reports from ophthalmologists throughout Britain. Many of the papers in the first decade of the 20th century quote similar observations, and use very similar titles; so we find Nettleship (1901), Stone & Douglas (1902) and Stephenson (1904) using the title "congenital Word-Blindness", and often qualifying this usage - inability to learn to read. Stone & Douglas (1902) raised a question of an hereditary aphasia; in Stephenson's paper (1907) he gives the example of a family in which three generations suffered from word-blindness. Other ophthalmologists such as Fisher (1905 and 1910) and Rutherford (1909) were inspired by Hinshelwood's work to contribute further papers. Papers on the subject were not confined to ophthalmologists, Thomas (1905) then a County Medical Officer, comments on his experience in London:

"It is now an instruction to all Head teachers of schools under the London County Council that they shall submit to the Medical Officer every child at the age of 7 who appears very backward or defective, in this way a great number of cases of word-blindness have been brought to light ... Congenital word-blindness, therefore, is more frequent than has hitherto been suspected."

Thomas (1908) in a later paper discusses the fact that congenital word-blindness may involve hereditary aspects as well as being more prevalent in boys. Two years later, McCall (1911) reported two cases of "congenital aphasia"

discovered during routine medical inspections at elementary schools in Cambridgeshire.

In 1900, Hinshelwood in an article published in the Lancet, described four cases that had come to his attention. Hinshelwood went on to produce several articles between 1900 and 1912 which he later summarised in his monograph "Congenital Word-Blindness" which was published in 1917. Hinshelwood tended to emphasise the structural aspect of the language disorder and had an explicit theory of the role of the brain in reading which he tested clinically. His theory was that there must be a separate place in the brain for (a) visual memory for the general everyday type; (b) visual letter memory; (c) visual word memory. In support of his theory about visual memory, Hinshelwood put forward the case reported in 1896, of the tailor who although he could perceive things normally, had a specific visual memory difficulty with everyday things. Hinshelwood's second category of visual letter memory, arose from his belief that word memory is not a compound of letter memory, but was an entirely different sort of memory located in a different place. To support this, he quoted the case of patients who could read whole words but could not spell them out or read individual letters. In 1899 Hinshelwood reported five cases in support of this theory, the first being a man of 24 who was recovering from a form of Spinal Meningitis.

"On testing him with letters it was found that he could neither read nor write a single letter of the alphabet except 'T' which he generally recognised and always named 'Tom' which was his own name. Nor could he point out any name letters except 'T'. The inability to recognise

them was the same with all sizes and forms of letters both written and printed. On testing him with words, however, in a large number of trials it was quite evident that he could read almost every word presented to him, even words of three or four syllables and very unfamiliar words, while at the same time he was quite unable to name or point out a single letter of the word he had just read."

Hinshelwood's last category involving visual word memory is possibly the more common type of Dyslexia (word-blindness). Hinshelwood's view was that there must be separate memory centres for words, letters and numbers; and that individual letters might be recognised whereas whole words might be impossible. To support this, Hinshelwood quoted the case (1898) concerning a man of 53 who had lost the ability to read words after having a stroke. He could read letters, numbers and groups of numbers fluently, he could also write from dictation and copy words correctly, but could not read what he had written. On the basis of this one symptom, Hinshelwood recognised the man must have had a stroke.

"I gave it as my opinion that the inability to read was not due to any ocular defect, but to a lesion in the word-memory centre situated in the angular and supra-marginal gyri on the left side of the brain and was supplied by a branch of the Sylvian artery, that the lesion was a small haemorrhage or more probably thrombosis occluding that branch of the Sylvian artery supplying the centre."

In his 1917 work, Hinshelwood advanced his theory of reading:

"To understand clearly the nature of the Dyslexic defect ... we must analyse a little more precisely the cerebral visual process connected with the act of reading and consider the manner in which an individual learns to read, the following remarks, of course, apply to the old fashioned methods of learning to read. Of the twelve cases reported in this book, all had been trained

in this way ... The first stage in the old method is to store up in the visual memory the individual letters of the alphabet ... It is by comparison with these permanent visual images of the letters and words stored in this cerebral centre that we are able to recognise the printed letters and words from a page of the book. If this cerebral area is destroyed by disease, then the individual loses this power of recognition and becomes letter-word-blind ... Under normal circumstances this first stage is accomplished with the comparative ease and repetitiveness, there being only 26 letters in our alphabet, or taking capital and small letters, 52 visual images in all to be acquired. The memory of words is first registered in our auditory memory centre and of course intermittently connected with the visual memory centre, as all cerebral centres involved in language are connected with one another. We are able to spell the words before we are able to recognise them by sight. When the individual has stored up in the centre of his left angular gyrus the visual memories of the individual letters of the alphabet, and in his auditory centre the spelling of the words, he is then able to enter the second stage of reading. He is now able to read words by spelling them out loud letter by letter, and thus by appealing to his auditory memory, he gets the proper words; or sometimes he may simply be seen to move his lips, spelling silently each letter, and thus appealing to his memory of speech movements ... or he may sometimes be seen tracing the letters with his fingers on the table and thus appealing to his writing centre. To reach the third or final stage in the art of reading is a much more formidable task, and requires for its accomplishment a much longer period of time. This third stage consists of the gradual acquirement and storage of the visual memories of words. When this is accomplished the individual reads not by analysing each word into its individual letters, but by recognising each word as a separate picture. The words then cease to be for such an individual simply a combination of letters. Each word is regarded rather as an ideogram, picture, or symbol which suggests a particular idea. The individual now recognises a word just as he recognises a landscape or a familiar face, by its general outline and form without resolving it into its constituent details. He has learned to read by sight alone. When he looks at the words on the printed page, he can now interpret them by comparison with the visual word memories stored in his angular gyrus, and there is no need for further appeal, as before, to his auditory memory or speech movement memory or writing centre. He has now successfully gained the final stage in the art of reading, viz., the power of reading by sight alone."

Hinshelwood went on to point out that these were the stages that might be expected among normal readers but suggested Dyslexic readers would have considerable difficulties. First of all, they would have difficulty in mastering the first stage of reading, and only with great persistence could they learn the letters of the alphabet. He expected that even more difficulty would be experienced in mastering the second stage of reading, but it might be done, providing the child had been taught phonetic rules. (Dyslexics taught by the 'look-say' methods - Hinshelwood's term - were unlikely to make this second stage). Hinshelwood believed that no Dyslexic would manage to master the third stage:

"There is thus manifest in (Dyslexic) children such a striking contrast between the capacity of the auditory and visual memories that it at once reveals a condition which is so abnormal that it can only be regarded as pathology ... They have been unable like (normal) children to furnish their visual memory centre with the visual memories of words and it is the great and persevering effort which is necessary to repair this failure and to remedy this defect which makes their education and career so different from that of ordinary children."

The effect of the 'British School' was quite significant in that it influenced researchers both on the Continent of Europe and in America. Peters (1908) in his paper written in German, cites Morgan and the other British pioneers. The fact that his cases were drawn from a German speaking population suggests that this was a significant paper, indicating that the difficulty was not confined to the English language. In the following year Plato (1909) published a paper dealing with the familiar incidence of Dyslexia, following the publication by Stephenson (1907) and Thomas (1908) of similar papers in Britain.

American Interest

The 'British School', writing in English, was to have a major impact on the development of research into language learning difficulties in America. Claiborne (1906) attributes to Shapringer (1906) the distinction of being the first American observer to record observations on this subject. Schapringer read a paper on the subject to the New York Ophthalmological Section in February 1906. And on that occasion he was followed by Claiborne who delivered his own paper. In his paper Claiborne referred to two cases and said that:

"It was my purpose to present an extended study of two boys whom I have recently seen and who have shown themselves so backward in learning to read that at the first blush it is exciting in my mind a suspicion of congenital word-blindness ... I do not doubt, that in these two boys, there is a congenital deficiency, or at least a tardy development of the word-memory centres; and the class of case to which they belong is to be clearly and definitely differentiated from those cases of word-blindness which occur in cerebral degeneration, intracranial tumours or lesions and injuries. Congenital blindness appears to me to be a department of paediatrics and neurology which has not received the attention it deserves."

Claiborne was not satisfied with the term 'blindness', he suggests the use of the term 'amblyopia' which means blunt or dim vision rather than complete blindness. His attempt to get away from the implications of blindness and deafness, while laudable, is one which few subsequent writers were to follow. Claiborne adhered to the general concept prevalent at that time in attributing the condition to brain damage, and discusses arbitrary pronunciations, methods of instruction in Public Schools and difficulty with mathematics. His suggestion, concerning children who had lesions which he thought affected the word and

letter memory cells, was that the children afflicted should be changed over to be left-handed writers, on the basis that the other side of the brain (without the lesion) might pick up or carry on and reinforce the lagging side. He stated "it is improbable that the corresponding cells on the right side are similarly affected, and thus the speech centre and the centres for symbols and sounds may be transferred to that side." Apparently, Claiborne was not aware that the non-dominant does not take over such functions after the first two or three years of life; neither was he aware of the confused dominance which exists in some cases. Claiborne was, however, optimistic that the handicap could be ameliorated. He advocated "methods of teaching to awaken the torpid cells into activity", and said "I believe the basis of instruction should be repetition."

In the same year, 1906, Edward Jackson, an American Ophthalmologist, suggested substituting the term 'developmental alexia' for 'word-blindness'. He argued that the difficulty was "essentially a failure of development, or a delayed development of a group of co-ordination"; "clearly a specific defect of brain development."

McCready (1909) a physician, published his first article on "Congenital word-blindness as a cause of backwardness in school children", and in the following year, 1910, he wrote a paper entitled "Biological variation in the higher cerebral centres causing retardation". In these and his 1926 article, McCready reported cases where there was no evidence of Aphasia produced by organic disease, but where there was reason to suspect hereditary influence, hence his

terminology "biological variation". McCready pointed out that children with such handicaps are often considered to be feeble-minded. He went on to say "these children may eventually become feeble-minded by deprivation unless their condition is exactly recognised and the proper treatment instituted." The lesson that was advocated by McCready in conjunction with other training, was to present the word impression through every possible sensory approach at the same time. His pupils listened to words, looked at them, pronounced and traced them simultaneously, thus building up all possible verbal associations, what we would today call a 'multi-sensory approach'.

During the first two decades of the 20th century, psychologists and educators gave little attention to specific language learning difficulties. Rawson (1968) makes the point that ophthalmologists contributed most to the recognition of this field, their observations leading eventually to the recognition that the difficulty lay not in the eyes but in the functions of the language areas of the brain. Arising from the work in ophthalmology, we have the statement that "not the eye but the brain learns to read". (Hermann 1959), Thompson (1966) mentions two notable exceptions, those of Bronner (1917) and Hollingworth (1918 & 1925). Bronner, who was the first psychologist in a Child Guidance Clinic established in Chicago in 1909, reported in considerable detail a study of seven cases with defects in language. The case histories revealed no suggestion of acquired brain damage, and by way of summary Bronner (1917) stated:

"It may be said that the analysis of the reading process shows that there are involved: (a) perception of form and sound and discriminations of forms

and sounds, (b) association of sounds with visually perceived letters, of names with groups of symbols, and of meanings with groups of words, (c) memory, motor, visual and auditory factors, and (d) the motor process as used in inner speech and in reading aloud. Reviewing the whole process, we see that in the actual performance of reading there must be finally some synthetic process uniting all the separate elements."

Witmer (1913) attributed the condition (Dyslexia) to "Congenital amnesia" and "defects of memory". Wallace Wallin (1914, 1922, 1927) used the term "visual aphasia" to describe subjects he had noted in his report to the St. Louis Board of Education. Like Town (1911) he attributes the condition to delayed, arrested, disturbed or distorted brain development, or brain injury in the language and adjacent areas.

Hollingworth (1918), an educational psychologist, published her first paper on special disabilities in spelling. Hollingworth came to the conclusion that infrequently cases are found of children who cannot learn to spell or whose ability to spell approaches zero. Although she designated such cases as having a special disability, Hollingworth did not believe that this was due to a congenital lesion or childhood injury, rather that it was "the very fag end of normal distribution of spelling ability". Consequently, Hollingworth (1918) concluded that such cases differ in degree but not in kind from normal spellers.

In 1923 Hollingworth published a book entitled 'Special Talents and Defects'. While calling attention to people who possessed a remarkable gift for reading, the book contains a detailed report of a four-year study of non-

readers. Hollingworth's contribution to the literature of remedial reading is to be found in the following quotation:

"See, therefore, that non-readers of general intelligence much above the minimum level required for reading, do learn to read when special training is given. This training may stress phonics (Schmitt), it may stress the motor and kinesthetic avenues of approach, (Fernald & Keller), or it may stress the visual perception (Gates). It may or may not proceed by the use of the old 'alphabet' method (Hinshelwood) ... In fact, no investigator has established his or her method as the only successful approach to particular cases, by excluding other methods by experimental teaching. For non-readers such as have been described under the criteria laid down by the investigators quoted, it seems highly probable that the best method would be that wherein all avenues of approach are fully utilised."

Hollingworth dealt with both special talents and special defects and raised a question which remains pertinent today:

"Cases where a generally stupid child is innately gifted with special ability to master the mechanics of reading, for example, are no doubt as frequent as cases where a generally capable child learns them with difficulty. The theory of specialised lesions or other faults of the structure might cover disabilities, but would it cover special talents as well?"

An attempt to identify the effect of I.Q. on reading was made by McMenemy (1969). Wallin (1968) in his review of the 'congenital' aspect of aphasia, discusses the critical views current at that time (first decades of 20th century) and also reminds the reader that Grace Fernald (1921) was a positive supporter of the concept, which she attributed to "some specific peculiarity of brain structure and function."

Dr. Samuel T. Orton

Dr. Orton was a physician, neurologist and neuro-pathologist who worked for most of his life in the Iowa State Psychopathic Hospital between 1922 and shortly before his death in 1948. He had a major impact on the American work in this field. Orton's Chief of Staff was Dr. L.G. Lowrey, who was later to become a major figure in the Child Guidance Movement. As his Director of Psychiatric Social work he appointed Miss June Lyday, and she later became Mrs. Samuel T. Orton. One of Orton's pioneering innovations was to establish mobile clinical teams composed of a Psychiatrist, a Psychologist and a Social Worker. Although the teams were based at Iowa State Hospital they set up one day clinics in various localities. Concerning the work of these clinics, Orton said:

"There are those children who were reported to the clinic as dull, subnormal, or failing or retarded in school work, was a fairly high proportion of those whose chief difficulty was in learning to read."

Among fifteen children who fell within this descriptive category, there were found to be two who precisely fitted Hinshelwood's description of congenital word-blindness. One boy, named 'M.P.' was studied at Iowa State Psychopathic Hospital, and was the basis for Orton's paper (1925). The paper entitled "Word-Blindness in School Children" was Orton's first paper on 'word-blindness' and he brought out many points related to language in various cultures, the role of dominance or laterality, aspects of hand-writing and mirror writing, possible genetic factors and the frustrations produced in children who struggle with language handicaps. Orton, like Hinshelwood, believed that there was a neurological basis

for these difficulties, but that the disorder was functional in nature rather than structural. The essence of his theory being based on the notion of hemispheric imbalance. Orton (1926) elaborated on many of these aspects in his neuro-pathological lectures, and of particular significance was his hypothesis that there are three levels involved in dealing with language:

1. Visual perceptive (the arrival platform)
2. Visual recognition (the condition of concrete objects)
3. Visual Associative (sensory material brought together to form the concepts).

In reference to the angular gyrus Orton said:

"Because of its strategic position at the junction of the occipital, parietal and temporal fields, it has been considered as ideally located for associative processes, but it also overlies a great mass of associative pathways linking the three zones, and the influence of deep lesions on the fibre tracts does not seem to have received sufficient attention."

In the same paper Orton also describes other aspects which he thought of major importance to language:

"The four activities which constitute the language faculty - understanding the spoken word, understanding the printed word (reading) speech and writing - seem to be controlled exclusively from one hemisphere since destruction of certain areas of one hemisphere cause loss of one or more of these functions, while destruction of the exact similar degree and in exactly the same part of the other hemisphere gives no demonstratable result. This striking difference in functional importance of the two hemispheres in the more complex functions underlying language constitutes the problem of cerebral dominance, and while much of the older view of the exact pigeon-holing of these functions into restricted areas, predestined for that particular purpose, is under challenge today, yet the general view of control of these functions from one hemisphere is particularly universally accepted."

... The two halves of the brain, however, while alike in size and design, that is the left hemisphere bears the same relation to the right hemisphere that the left hand does to the right hand, if then there should be a failure in establishment of the normal physiological habit of using exclusively those of one hemisphere, there might easily result in a confusion in orientation which would exhibit itself as a tendency towards an alternate sinistral and dextral direction in reading and in lack of prompt recognition of the differences between pairs of words which can be spelt backwards or forwards, such as was and saw, not and ton, on and no, etc. ... Extended studies have shown that confusion in direction bears a significant relationship not only to reading-retardation in children of normal intelligence (specific reading disability), but also to the amount of their handicap. In their earlier years these children have greater trouble than average in telling d from b and p from q. Later they learn to tell these letters apart quite readily when seen alone, but they are apt to get them mixed when encountering them as parts of words, or this may evince itself in written spelling, as when a boy writes "bady" for baby and "septemder" for september and cannot see the error on re-reading it. Still later, these simplest confusions between letter-forms are entirely corrected, but errors due to wrong sequencing or direction of reading are common. Here the most frequent are confusions of palindromic like wæ and saw, as mentioned above, but we also very often find a few letters turned round in the middle of a word. Of this type my recent case records show pardon written as pradon, maple as malpe, story as sorty and target as tagret. Obviously, such failure of the printed word to call up its sound in proper sequence forms an obstacle to arousing that auditory memory of the word to which its meaning is attached, and reading is sadly blocked."

Orton seems to have elaborated on Hollingworth's (1918) conclusion that learning disabilities differ in degree, but not in kind, from normal spellers, by referring on several occasions to the fact that reading and other language problems are to be found in all degrees of severity as a continuous series. He also suggested that they may exist in children of all levels of intelligence - they may even exist in a genius - as well as in those with complicating physical disabilities or with contributing environmental.

hardships or personality deviations. To Orton, this suggested that the process of learning to read entails the elision of the focus of attention of the right hemispheric images. When the left hemisphere was unable to perform that critical suppressive function, confusion and delays would result. There would be distortion of the motor output in both speech and writing, interference in the linking of visual symbols and sounds, and subsequent failure to associate sounds and meaning. Orton called this whole disability STREPHOSYMBOLIA. The Greek roots of the term - Strepho and symbolon - meaning "twisted signs".

Orton describes six clusters of disabled behaviour which he believed to represent dominance failure of the left hemisphere:

1. Developmental alexia - difficulty in learning to read.
2. Developmental agraphia - difficulty in learning to write.
3. Developmental Word-deafness - difficulty in recognising the spoken word.
4. Developmental motor aphasia - slow development and disorders of speech.
5. Childhood 'stuttering' - spasms of the speech musculature.
6. Developmental Apraxia - abnormal clumsiness.

In presenting the three Salmon lectures in 1936 (published in 1938), Orton presented what remains a classic text for those interested in language disorders. It not only represented a condensed summary of findings for a ten year period, but also included interpretations made over much longer periods as well as studies of the literature, in the clinic, at the autopsy table, and in the laboratory.

In a section entitled "Emotional Reactions and Behavioural Patterns", Orton referred to the special efforts he made to ascertain whether any deviations in emotional development were manifest before the onset of language difficulties, and he found "a very considerable variability in the individual reaction to a given handicap dependent not only upon diverse factors in the child's own make-up, but also upon the social, economic and educational status and ambitions of the family". However, "the reading disability cases as a group form a clear cut example of the appearance of emotional disturbances which are purely secondary to the academic obstacle". With reference to all kinds of language disturbances Orton said:

"As a child who carries any form of unrelieved language handicap grows up, there naturally ensues an accumulated emotional overlay which in many instances makes an effort to assign etymological significance to either the organic or the emotional factors that are present in the situation as purposeless as attempting to allot pre-eminence to either the warp or the weft of a piece of cloth".

At the end of his book (1938) Orton made his succinct statement which has been referred to as "The Orton Credo":

"The view presented here that many of the delays and defects of the language development function may arise from a deviation in the process of establishing unilateral brain superiority in individual areas, while taking account of the hereditary factors, brings with it the conviction that such disorders should respond to specific training if we become sufficiently keen in our diagnosis and if we prove ourselves clever enough to devise a proper training method to meet the needs of each particular case."

Orton and his associates demonstrated that children with specific language disabilities could be taught, and showed they could be taught so that academic failures and emotional reactions accompanying them could be largely eliminated.

Such was the impact of Dr. Orton's work and the inspiration he inspired in others that in 1949 the Orton Society was founded in the United States by a group of Doctors, reading and speech specialists, parents and others who had been closely associated with his work.

J.L. Orton (1957) in a paper entitled "The Orton Story" attempted to summarise what strephosymbolia meant and lists the following characteristics as being present to a greater or lesser degree in all children having a reading disability of this type.

1. Their attainment in reading is considerably below that expected of their mental age and their years of schooling and is often below their achievements in arithmetic.
2. They show no evidence of any significant impairment of vision or hearing, or brain damage, or primary personality deviation, or any history thereof.
3. They show great difficulty in remembering whole-word patterns and do not learn easily by the 'sight method' of reading. They tend to confuse small words which are similar in general configuration.
4. They are poor oral readers and fundamentally poor spellers, although they can sometimes retain memorised lists of spelling words for varying lengths of time.
5. In their early attempts at reading and writing, they show marked confusions in remembering the orientation of letters 'b,d,p,q', and the order of letters in words or numbers in sequences - 'saw - was, on - no, felt - left, twelve - twenty-one'. They are sometimes called mirror-minded' or 'mirror-readers'.

6. They usually show some evidence of delayed or incomplete establishment of one side motor preference (unilateral cerebral dominance). They tend to be left-handed or ambidextrous or mixed in their motor choices, e.g. right-handed and left-eyed, or they may have been slow in the establishment of their handedness.
7. They often show delays or defects in more than one language area. In addition to poor reading, they may have delayed or imperfect speech, a poor ear for words, a poor oral vocabulary, or clumsiness in handwriting or in other motor acts.
8. They usually come from families in which there is left-handedness or language disorders, or both.
9. There are three or four times as many boys as girls.

During the '30s Anna Gillingham and Bessie Stillman worked with Orton to develop a remedial programme that reflected Orton's theories. A curriculum was designed to give children practice in linking kinesthetic, auditory and visual information. The book "Remedial Training for Children with Specific Disability in Reading, Spelling and Penmanship" by Gillingham and Stillman, is still referred to as the Orton-Gillingham approach, and is epitomised by the description of teaching which must be "Structured, Sequential, Cumulative, Thorough and Multi-Sensory".

In Britain

By the 1930s the major influences in the formative stages of dyslexia had emerged. Although originally a term used by physicians, it had become the subject of interest for psychologists, educationalists and ophthalmologists.

Critchley (1970) observed:

"What had hitherto been a medical province or responsibility, now became invaded by sociologists and educationalists, psychologists. Backwardness in reading became envisaged more as a problem in sociology than a medical issue."

The impetus provided in British education by the passing of the 1870 'Foster' Education Act, led not only to State Education but also to great advances in literacy. In the 100 years between 1850 and 1950 the decrease in illiteracy in Russia (due mainly to the Revolution) dropped from 90% to 10% (Cipolla 1969). The value of literacy became a debating point for sociologists and political theorists (Hoggart 1957). In Britain, educational views had been strongly influenced by men such as Burt (1921, 1937), and Schonell (1942) who championed the view that reading failure was a non-specific condition, brought about by a variety of intellectual, environmental, genetic, emotional and educational factors (Burt 1966). Efforts to identify just how many children experienced reading difficulties were attempted in several large scale surveys. MacMeeken (1939) found that 9.1% of 7 - 10 year olds in Edinburgh had reading quotients less than 85% of their I.Q.s. Schonell (1942) in a study of 15,000 children suggested that 4 - 5% could be described as having 'specific backwardness', described as 'ability in a subject at least one and a half years below their other educational attainments and at the same time below their level of general intelligence'.

In 1944 the Education Act listed ten categories of children who would need 'special educational treatment'. These led to the recently criticised practice of 'labelling' children according to the category, i.e. ESN (the

educationally sub-normal) or Mal.Ad. for the mal-adjusted. The use of categories led to questions as to the possibility of individual development or change, and whether borderline cases placed in special classes became examples of fulfilling the teachers' prophecies (Rosenthal & Jacobson 1968, Howards 1971). Bookbinder (1967) suggested that allocating a borderline child to an ESN class would convey:

"Our low expectations of his future performance. It is a short and easy step for the child to adopt those low expectations for himself and so to view himself permanently as a backward child."

Concern aroused over low levels of literacy led to a survey carried out under the auspices of the Ministry of Education in 1948 (published in 1950 with the title 'Reading Ability'). This found the total of illiteracy among school-leavers was less serious than before often stated. The survey of reading standards introduced the categories of 'semi-literate', defined as a reading ability of between 7 and 8 years old, an 'illiterate' who had a reading ability of less than seven years, and 'backward' readers were reported as forming 30% of school-leavers.

At about this time the unit which became known as the Dyslexia Clinic was established at St. Bartholomew's Hospital. This arose from the interest of Dr. E. Strauss, who was then head of the Department of Psychological Medicine, and took an interest in a 'word-blind' child (Holt 1962).

Interest in quantifying differences between groups experiencing reading difficulties led Ingram & Reid (1956) to investigate the characteristics of some 52 severely backward readers. As in the American studies using the WISC -

Wechsler Intelligence Scale for Children (Graham 1952, Seashore 1951), they identified two groups according to whether they achieved higher scores on the verbal or performance scale. Those subjects with higher verbal scores (23) were markedly inferior on tests involving the analysis and synthesis of patterns. The group which achieved higher performance scores (13) were found to be inferior on tests of comprehension and vocabulary.

During 1956 a second Ministry of Education survey was carried out and published in 1957 under the title 'Standards of Reading'. Using the three categories of literacy from the 1950 survey, they reported an improvement with only 25% of children falling within the three lowest reading categories. In the following year Vernon (1957) produced her influential book on 'Backwardness in Reading'. In this book she surveyed the whole field of reading difficulty. From this she compiled a list of the causal factors most frequently used.

1. Inadequate readiness for reading.
2. Physical handicaps such as defective sight and hearing.
3. Neurological defects.
4. Internal disorders and lack of vitality (motivation).
5. General retardation of speech development and speech difficulties.
6. Limited vocabulary.
7. Restricted background of experience owing to social culture handicaps.
8. Personal factors, emotional difficulties and general adjustment difficulties.
9. Social factors.
10. Environmental factors.

11. Irregular school attendance, frequent changes of school or teacher.
12. Unfavourable home conditions.
13. Defective teaching methods and school organisation.
14. Inadequate supplies of reading material of satisfying interest value and too large classes.

Morris (1959) produced the results of a study carried out in Kent during 1954. This was concerned with teaching and concluded that half the severely backward readers at ages 7 - 8 years old would still be backward on leaving school at 15 years.

The noted visual perceptual differences in children with reading difficulties was investigated by Zangwill (1960). He found poor performers on the Kohs Blocks, inability to copy the Necker Cube and problems in drawing a bicycle. Miles (1961) reported the case of a ten-year old dyslexic girl whose drawings of a bicycle and a plan of her home were hopelessly confused, as were attempts to reproduce from memory the Terman-Merrill design. Meredith (1962) quotes from Vernon's 1961 address on 'Dyslexia and Remedial Education':

We need far more accurate and systematic investigation of the disorders themselves ... not by large scale statistical surveys, in which all varieties of reading disability are lumped together, but by systematic study of individual cases."

Zangwill (1962) produced a paper in which he reviewed the areas of agreement about dyslexia. "Reasonable agreement appears to have been reached on the following points:

1. Developmental dyslexia is to be regarded as endogenous and almost certainly arises on a neurological basis. It is not primarily a psychiatric disorder.
2. Dyslexia is seldom wholly specific, retarded speech, poor development of verbal skills and certain minor

disorders of motor functions are commonly found.

3. Defects in visual form perception and directional sense, though relatively common among dyslexic children ... particularly in the younger age groups ... are not essential correlations of developmental dyslexia.
4. Anomalies of laterality in dyslexics are perhaps less significant than was at one time suspected.
5. Remedial education is worthwhile.

A number of papers by Ingram (1959a, 1959b, 1960, 1963a, 1963b, 1964 and 1968) established him as an important British influence in the field. Ingram also chaired part of the Invalid Children's Aid Association (ICAA) conference on 'Word-Blindness or Specific Development Dyslexia' in 1962. This brought together many of the British researchers currently working in the field (Franklin 1962). Following this conference the ICAA established the Word-Blind Centre in Coram's Fields, London, in 1963, and funded it until 1972 (Naidoo 1972a). The Word-Blind Bulletin was published by the Centre from 1963 to 1972 (Naidoo 1972b).

By 1963 interest in different teaching methods had been aroused. Lovell (1963) reported on a sample of over 1,300 children from eleven matched pairs of schools using formal and informal methods. No significant difference was found in the mean reading ability, although the amount of backwardness was greater in the schools employing formal methods. Nor were differences found between the two methods in a later study by Kellmer, Pringle & Reeves (1968).

Ingram (1964) identified three sub-groups on the basis of the type of difficulty the child seemed to experience in reading. These were:

- a) Visual-spatial difficulties;
- b) Speech-sound difficulties;
- c) Correlating difficulties.

At this time Bannatyne, the first Director of the Word-Blind Centre, was visiting the United States and Scandinavia in order to see and synthesise practices which might be used in Britain (Bannatyne 1966c, 1966d).

The 1964 Department of Education and Science report 'Slow Learners at School', had continued to improve overall. They noted with concern that the lowest 10% continued to form a core of virtually illiterate children at age 11 years. A study by Douglas (1964) found significant differences in word recognition and sentence completion skills among 5,000 8-year old children in upper-middle and lower-middle, upper-working and lower-working classes. There was a further difference by the age of 11 years in favour of the middle-class child improving more than the working-class child.

Kellmer, Pringle, Butler & Davie (1966) studied 11,000 children entering Junior School and also found that social environment was a major factor effecting reading achievement. They estimated that 18% were poor readers and 9.8% were non-readers. Eisenberg (1966) showed that reading retardation was highest in the ordinary schools in Metropolitan areas (where socio-economic status was lowest) and lowest in the independent schools (where socio-economic status was highest). Goodacre (1967 & 1968), Hart & Fagg (1976) came to similar conclusions, but noted that teachers had substantially higher expectations of middle-class children, and under-estimated those of working-class children. Morris (1966) in her second study in Kent, drew attention to several factors related to the acquisition of reading ability. Marked differences were found on measures of non-verbal intelligence between backward readers (mean IQ 87-88)

and good readers (mean IQ 114-115). There were marked differences in the home backgrounds of the two groups; both in occupational class as well as in the number of books and periodicals in the home (library membership of parents). More importantly, Morris contended that reading achievement is related to the skill of the teacher, with teachers of backward readers often being less skilled in dividing the class into small groups and giving individual attention. Those taught by untrained, inexperienced and unskillful teachers tend to be especially backward in reading (Vernon 1971); yet it was these classes that Morris also found to lack an adequate supply of books and other reading materials. Morris believed that backwardness was caused by a number of pre-disposing factors and that the greater the number of factors present, the more severe and lasting the backwardness.

Despite Morris's (1966) rejection of the term 'dyslexia' and the opposition of Sir C. Burt, other eminent writers clearly expressed their support. Critchley (1964) produced a detailed history, and took issue with Burt's (1950) reference to "so-called 'word-blind' children". Miles (1967) was another researcher who wrote in support of the concept of dyslexia. In 1968, under the then President Macdonald Critchley, the World Federation of Neurology, Research Group on Developmental Dyslexia, drew up two definitions which they recommended for general acceptance:

Specific Developmental Dyslexia - A disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence and socio-cultural opportunity. It is dependent upon fundamental cognitive

disabilities which are frequently of constitutional origin.

Dyslexia - A disorder in children who, despite conventional classroom experience, fail to obtain the language skills in reading, writing and spelling commensurate with their intellectual abilities.

Many definitions are criticised as being a definition by exclusion (Benton 1975). Critchley (1969) puts forward four arguments in favour of a specific type of developmental dyslexia. These comprise:

1. persistence into adulthood;
2. the peculiar and specific nature of the errors in reading and spelling;
3. the familial incidence of the defect;
4. the greater incidence in the male sex.

These and several other factors that often seem to be associated with language learning are discussed by Bowley (1969) in a study of Kensington Junior School children, Brenner (1967) in a Cambridgeshire study, and Gordon (1969) who studied co-ordination problems. A recent report by Tansley & Pauckhurst (1981) provides an excellent review of both the primary and secondary correlates in the aetiology of constitutional learning difficulties.

A survey carried out in the Inner London Education Authority in 1968 (Little et al 1972) indicated that some 25% had a reading quotient of less than 85. These figures, which relate to a metropolitan area with a high proportion of lower income groups seems to support the earlier studies (Eisenberg 1966, Morris 1966) and later studies (Berger, Yule & Rutter 1975, Rutter et al 1975, and Yule & Rutter 1976).

A major step was taken in 1969 with the establishment of a Working Party to investigate the problems of the adult dyslexic. This British Council for Rehabilitation of the Disabled initiative arose as a result of the increasing number of students seeking help.

The working party report 'People with Dyslexia' (Kershaw 1974) concluded that prevention was better than cure, advocating early identification and remedial help as well as recommending greater provision of remedial help for adults. The report covered aspects related to the early development of dyslexics, tertiary education, examinations and employment. Two influential British reports were published in 1970, the Isle of Wight study by Rutter, Tizard & Whitmore (1970), and Clarke (1970) who's study was undertaken in Dumbartonshire. This latter study was conducted in Local Authority schools in a mainly industrialised zone. From 1,544 children, 230 were selected on the basis of a reading quotient of 85 or less (some 14.9% of the original sample) at 8 years old. The full scale IQ on the WISC was 89.8, with 61 of the children studied failing to achieve any score (verbal/performance or full scale) above 90 or in the average ability range. By the age of 9 years, severely backward readers were found to be mainly boys, moderately backward readers (1-2 years below expected reading level) represented 5.1% of the total population. Three years after the screening these 230 children were retested and over half the group still required assistance in reading. Writers vary in their views as to whether the WISC scores, and in particular the verbal scores, were the result of linguistic difficulties (Vernon 1976) or a contributory cause (Gessert 1976).

The epidemiological study carried out on the Isle of Wight by Rutter, Tizzard & Whitmore (1970), involved some 1,100 children in three groups aged 9, 10 and 11 years. Three groups were identified on the basis of reading attainment and intellect. Intellectually retarded children were defined as those whose scores were two standard deviations below the mean. 'Backwardness in reading' was the term used to describe those children whose reading accuracy or reading comprehension on the Neal test was two years, four months or more, below the child's chronological age, regardless of IQ. Children whose reading attainment was 28 months or more below their expected reading level based on mental age (using the short WISC IQ) were described as suffering 'specific reading retardation'. This latter group had a mean IQ of 102.5, compared with the backward groups whose mean IQ was 80. 76% of the retarded group were boys, and Rutter et al (1970) stated that 6.6% must be regarded as the minimal estimate of retarded reading. Specific reading retardation was found to be associated with abnormalities in speech and language development. In the same year a study by Ingram et al (1970) of 82 children suffering from 'dyslexia' or specific learning disabilities, came to similar conclusions.

Critchley (1970) published the second edition of his book on dyslexia entitled 'The Dyslexic Child'. Although an excellent review of the field, Critchley's views often go beyond either the data drawn from other studies or case histories. Critchley hypothesised that there would be a 'hump' at the lower end of the distribution of reading skills. The fact that there would be more under-achievers in reading than might be expected from a normal distribution.

would, in Critchley's view, be due to the presence of dyslexic children. Although Critchley did not provide data to support this hypothesised 'hump', evidence did come from the studies carried out by Yule et al (1974). Yule & Rutter (1976) discarded the discrepancy model which relied upon the difference between potential and achievement as 'naive' (Pidgeon & Yates 1957) in favour of the 'regression equation between aptitude and intelligence' (Thorndyke 1963). Using data from the Isle of Wight study (Rutter et al 1970), the follow-up study (Yule 1973), and the Inner London Study (Berger et al 1975), they concluded that there is a 'hump' as hypothesised by Critchley which is not just the lower end of a normal continuum. In his follow-up study of the Isle of Wight children, Yule (1973) found that the retarded readers made significantly less progress in reading and spelling than did the less intelligent backward readers.

Yule & Rutter take an interactionist and multifactorial view of specific reading retardation (Yule & Rutter 1976) concluding "There is no evidence for the validity of a single special syndrome of dyslexia". Many other writers consider a genetic component possible (Boder 1971, Guildford 1971, Miles 1974, Tarnopol & Tarnopol 1976). Yule & Rutter feel that the constitutional component in dyslexia is far from being proven, despite the definition of the World Federation of Neurology (Critchley 1970) and studies (Bannatyne 1974, Thomson & Grant 1979, Kaufman 1979, Moseley 1980) involving patterns identified within the WISC. Subsequent evidence for separating the backward and retarded readers came from Rutter et al (1976). They showed that whereas backwardness including backwardness

in reading is evenly distributed between the sexes, specific reading retardation affects proportionally more males (3.3 males to 1 female). 'Hard' neurological signs were more often associated with general backwardness, and 'soft' signs (Critchley & Critchley 1978) were more frequent in the backward reading group. Yule & Rutter (1973) say they recognise the seriousness of the learning problem, but feel the aetiology does not permit the use of a single term. There is agreement on the severity and long term nature of a specific learning difficulty: "It is clear from our epidemiological studies that at present if a child is a retarded reader by 10 years of age, one can only be pessimistic about his educational future". Rutter (1978) concluded that their studies suggest "a very persistent disability which constitutes a real handicap",

A major legislative influence was the passing of the Chronically Sick and Disabled Persons Act in 1970. This included a section on 'Special educational treatment for children suffering from acute dyslexia', but although this recognition was welcomed (Kershaw 1974) as a sign of public concern, there was no compulsion on the Local Education Authorities to implement this part of the Act. This led to a committee being established to advise on guidance for children suffering from dyslexia. The committee, under the chairmanship of Professor Tizard, produced a report in 1972 entitled 'Children with Specific Reading Difficulties' (Department of Education & Science 1972). The report concluded that although it was possible to separate a minority of children with severe reading

difficulties (and often spelling, writing and number problems) the term 'dyslexia' was used loosely and in misleading ways. The report proposed the use of the descriptive term 'specific reading difficulties' and made nine recommendations on helping such children. This term suggested has failed to find favour; although claiming to be descriptive, it is also restrictive since the term effectively limits concept to failure in reading, although the report itself had acknowledged that other aspects such as spelling are often a major factor.

Newton (1970) conducted a study of children referred to the Child Guidance Clinics and the Child Study Centre at Birmingham University. This study involved twenty-five children between eight and thirteen, together with a control group, matched for intelligence, socio-economic level, school opportunity and age, the variable being a discrepancy in reading ability. The results of E.E.G. recordings showed evidence of unresolved dominance in the subjects with reading difficulty. Thirty-five percent were in the group genetically determined, and forty percent - were in a group whose difference was thought to be due to neurological impairment. A total of eighty-four percent of the dyslexic group showed mixed laterality compared with only eight percent of the normal readers. Humphrey (1951) had postulated that cerebral representation of the language function in sinistral people is bilateral to a greater degree than in most right-handed people. Studies by Humphrey & Zangwill (1952), Ettlinger & Jackson (1955), Ettlinger, Jackson & Zangwill (1956) seem to support this. Newton's study and those reviewed by Rosenthal (1977) are seen as evidence for the claim that a neurological

difference is associated with learning difficulties. Similar findings by Kawi & Pasamanick (1959) suggest that ambilaterality is a critical feature of dyslexia, being concomitant with both genetic and neurological symptoms (Newton 1970). Galin & Ornstein (1970) reviewed clinical and laboratory evidence indicating that certain cognitive functions were predominantly in either the left or right hemisphere. They concluded that "studies of brain-impaired and neuro-surgical patients show that damage to the left hemisphere interferes more with language processing and with mathematical, analytic tasks, and that damage to the right hemisphere interferes more with spatial relations and with gestalt, synthetic tasks". Shute (1976) quotes Newton (1968, 1971) as suggesting that the left-handed or ambidextrous individual may be handicapped in a 'verbal society' by low linguistic skills, but since there is evidence suggesting that 'ambilaterality predisposes to good visuo-spatial ability', this may be reflected in artistic design, engineering or architectural skills.

The work carried out in the University College of North Wales has been a major influence in Britain. Miles (1970) produced the first of his books aimed at helping parents and interested professionals. In the introduction to a subsequent book Zangwill (1974) suggests that dyslexia is best described as a 'Syndrome', that is a constellation of associated difficulties, rather than as a difficulty in reading and spelling in a narrow sense. Miles (1974) lists eleven 'signs' of dyslexia, but cautions that "the meaning of a particular sign will depend on the context in which it occurs". Diagnosis is advocated on the basis of:

- a) Discrepancy between intellectual level and performance at reading or spelling, and ...
- b) Discrepancy accompanied by supporting 'signs', the main signs to look out for being:
 - 1. Discrepancy between intellectual level and performance at spelling;
 - 2. Bizarre spelling.
 - 3. Confusion of 'b' and 'd' in either reading or writing or in both.
 - 4. Difficulty over distinguishing left and right.
 - 5. Difficulty in repeating polysyllabic words.
 - 6. Difficulty repeating digits in reverse order.
 - 7. Difficulty in repeating months of the year, especially in reverse order.
 - 8. Inability to do subtraction without 'concrete' aids.
 - 9. Difficulty in memorising arithmetical tables.
 - 10. Losing the place when reciting tables.
 - 11. A history of clumsiness, late walking or late talking.

Subsequently these associated factors were embodied in the Bangor Dyslexia Test (Miles 1983) and supported by an extensive analysis of data from dyslexic and non-dyslexic children.

Young & Tyre (1983) and Coltheart (1983) have criticised this approach, and like Crystal et al (1976), prefer to analyse reading errors, but make the same point as Miles (1974), that the symptoms believed to characterise the disorder are not shown by every dyslexic child, nor is every non-dyslexic child free from these symptoms. For this reason, the lists of points sometimes associated with dyslexia (Critchley 1981, Naidoo 1972, Helen Arkell Dyslexic Centre 1982) are believed by some professionals to be too general and all-embracing, giving rise to false hopes by some parents. The value of such signs is that they may lead to positive attitudes, encouraging parents to seek clarification of the specific difficulty, realisation of

a higher potential by teachers and the child, alertness to the need for early identification and the benefits of remedial help.

Vernon (1971) up-dated and enlarged her work on 'Backwardness in Reading' (Vernon 1957) and, while providing a comprehensive review of the field, also discusses specific developmental dyslexia. Two quotations are felt to be particularly relevant to the present study:

"An even more unfortunate consequence is the plight of those children who fall behind their peers in reading achievement. True, many of these come from homes in which no great value is attached to the more advanced type of literature. Yet even in these it may be that a child or young adult who cannot, for instance, read the newspaper is handicapped. Illiteracy is regarded particularly in middle-class families as a social stigma as well as a bar to entry to a profession. In recent years appreciable numbers of parents have been shocked to realise that their otherwise normal children cannot read at all, or so slowly and inefficiently as to threaten their future careers. Moreover, educationalists may have been slow to recognise the existence of their condition and to provide suitable remedial treatment."

Vernon (1971) acknowledges the difficulties in distinguishing between dyslexic and non-dyslexic backward readers. In relating the 'maturation lag' hypothesis and long-term effects on reading, she suggests:

"The lag may also appear in incomplete establishment of cerebral dominance, but there is no satisfactory evidence that this affects reading directly. In some cases delay in maturation may be associated with general immaturity of the personality or may be aggravated by emotional stress. Immature dyslexics may improve in reading as they grow older, and their difficulties might be obviated to some extent by a delay in the beginning of formal instruction. But in the most severe cases the disability would seem to be permanent, at least as regards spelling and the more advanced stages of reading. The cortical basis of the disposition is unknown, but in an appreciable proportion of cases it appears to be not only innate but also inherited."

Naidoo (1971) claimed that developmental dyslexia is both specific and constitutionally determined and can be con-

sidered under the following headings: genetic; maturation lags; neurological disfunction and cerebral dominance. In her book 'Specific Dyslexia' (Naidoo 1972a), Naidoo reported investigating a highly selected clinical group of 98 boys examined at the ICAA Word-Blind Centre between 1967 and 1969. The study investigated home and family background, school, behaviour, neurological aspects, perinatal history, articulation, sound blending, auditory discrimination, visual retention and patterns within the Wechsler Intelligence Scale Scores. Evidence was found that some reading and spelling disorders are constitutionally determined. Factors related to birth weight, behavioural and early illness were not found to be significant. Family histories of reading and spelling difficulties are associated with language learning and were all noted. Naidoo drew the following conclusions:

1. There was no evidence for clearly defined subtypes of dyslexia.
2. Some reading and spelling disorders are constitutionally determined.
3. There was evidence to suggest that sequencing disability may underlie the reading and spelling retardations.
4. The importance of developmental neurological anomalies in the aetiology of specific developmental dyslexia is demonstrated.
5. Only a multiple aetiology would account for many of the observations.
6. Greater similarities than differences were found between severe dyslexics, and those showing a lesser reading difficulty, but whose spelling remains a handicap, suggesting that their disorders are of an essentially similar nature.
7. Family histories of reading and spelling difficulties are significantly commoner in dyslexics.
8. There is no greater frequency of mother/child separations, behavioural problems, birth hazards, early illness, birth or family order when dyslexics are compared to controls.

9. Although the majority of dyslexic boys had been given much assistance, only 15 had received remedial tuition. All were still experiencing considerable difficulty, indicating that the help given was inadequate.

During the last twenty years a vast number of papers, articles and books have been published on the various aspects of reading, spelling and language learning difficulties (Critchley 1970, Levine 1971, Steeves 1983, Doebling 1983). Hagin (1973) after reviewing the literature from 1956 through to 1972, calls it an "explosion of publication ... that is all but inexhaustible". Klasen (1972) pointed out that "in 1968 in the United States alone there were 4,000 research publications and 50,000 books and articles on various important dimensions of normal as well as impeded reading processes".

A complete review of the literature is beyond the scope of this overview. A survey of the major contributions to the field can be found in works such as Cordoni's (1976) doctoral thesis reviewing research during the last century. Other writers have tried to make this plethora of information more understandable by grouping it under different categories. Singleton (1976) contended that hypotheses regarding the causation of dyslexia could be divided into four broad categories:

- Genetic factors
- Defective lateralisation
- Developmental delay
- Brain damage.

Wheeler & Watkins (1979) produced an 'index of deficits' which, while not exhaustive, can with advantage be read in conjunction with Bannatyne's (1971) classification of causes and types of dyslexia. Wheeler & Watkins summarised dyslexia as "a polymorphous concept describing a general

language deficit which is a specific manifestation of a wider limitation of processing all forms of information in short-term memory".

Index of Deficits:

Directional confusion (left-right)

Writing and spelling impairment

Finger differentiation problems

Visual-perceptual deficiencies

Handedness and cerebral dominance

Weakness in memory storage

Maternal and natal factors

Motor disfunctions

Delayed maturation

Delayed speech development

Neurological disfunction

Familial or inherited disability
(Genetic factors)

Sex difference

Language delays

Attitudes, especially in education, have been strongly influenced by Governmental reports. The Tizzard Report (Department of Education & Science /DES 1972) has already been described as preferring the term 'specific reading difficulties'. The Bullock Report 'A Language for Life' (DES 1975) also rejected the term dyslexia, since it was felt to serve little useful purpose other than to draw attention to the problems faced by children it was used to describe. Difficulties in its use were related to the fact that the term was neither susceptible to precise operational definition nor indicating any clearly defined course of treatment. The term 'specific reading retardation' was preferred to describe "a rather small group of children who experience difficulty in learning to read that cannot be accounted for by limited ability or by emotional or extraneous factors". The report found that 13% of secondary

schools questioned judged that at least a quarter of their pupils aged 12 required 'special provision' on account of reading and language difficulties, and that in 10% of schools the same number of pupils were in a similar situation at age 14 years. The report reviewed a number of research studies which suggested that the effect of remedial treatment was disappointing, and gains were short-term. They concluded that attention should be drawn to services for illiterate and semi-illiterate adults since "it is clear that only a very small number of them receive instruction". Provision throughout the country as a whole was inadequate and should be greatly increased.

The Warnock Report (1978) entitled 'Special Education Needs', was the report of the Committee of Enquiry into the Education of Handicapped Children and young people. It recommended the abolition of the categories of handicap introduced by the 1944 Education Act. The report felt that for the estimated 20% of children who will need special provision at some time during their school life, the term 'children with special educational needs' should be used. The report also adopted the term 'specific learning difficulty' to describe those children who experience long-term difficulties in reading, writing and spelling. The majority of the recommendations from this report were embodied in the 1981 Education Act. Under this Act a child has a 'special educational need' if he has a 'learning difficulty' which calls for special educational provision to be made to meet his needs. A learning difficulty may include physical and mental disabilities, or any kind of learning difficulty experienced by a child providing that:

"he has a significantly greater difficulty in learning than the majority of children his age."

Section I (2a)

Although the Warnock report and subsequent Education Act (1981) prefer the term 'specific learning difficulty' rather than dyslexia, the terminology in the Act is likely to mean that attention will increasingly be focused on 'special educational needs'. Baroness Young (1981), Minister of State for Education & Science, said during a debate in the House of Lords:

"whatever the cause or nature of the condition commonly called dyslexia ... the degree of the difficulty should be revealed by assessment and local education authorities will have to make appropriate arrangements for meeting the individual's educational needs."

Hansard 14.1.81.

There are similarities between the legislation enacted in respect of handicapped children in Britain and the United States. The effect of U.S. Public Law 94-142 (Education for All Handicapped Children Act 1975) has been to change the emphasis from efforts in categorising or labelling the child, towards the provision of appropriate educational support according to the individual child's needs. The definition of children with 'specific learning difficulties' used in this legislation is:

"Those children who have a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations. Such disorders include such conditions as perceptual handicap, brain injury, minimal brain disfunction, dyslexia and developmental aphasia. Such terms do not include children who have learning problems which are primarily the result of visual, or emotional disturbance or environmental cultural or economic disadvantage."

In search of a definition

Problems of defining Dyslexia are well documented (Daniels 1962, Burt 1966, Reid 1968, Ravenette 1968 & 1978, Howards 1971, Singleton 1975a and 1975b, Downing & Leong 1982),

often because the term states what the dyslexic is NOT, and is arrived at by the process of exclusion (Benton & Pearl 1978, Calfee 1983). This difficulty is not confined to dyslexia, the concept of intelligence has been hotly debated (McNeman 1964); and Miles (1957) reviewed the difficulties related to the fact that the word 'definition' itself has twelve definitions. Halitsky (1976) devotes a considerable part of her thesis to reviewing twenty-seven definitions advanced by major writers. Each attempt, reflects both the writer's disciplinary background as well as the purpose for which the definition was developed. It is inevitable that each field should tend to view the problem from its own parochial point of view. Aetiological references (possibly because many writers come from the medical disciplines) suggest that neurological disfunction is a major factor, but accept that there is a constitutional or genetic pattern of transmission, and that this implies a form of syndrome. Newton et al (1979) suggest:

"dyslexia describes a specific type of cognitive functioning characterised by a delay in acquiring written, and sometimes spoken language."

Writers such as Crabtree (1976), Young & Tyne (1983) who find little value in the term, have criticised such definitions as circular or amounting to little more than a description.

Simplified definitions of the word dyslexia often result in descriptions of the Greek or Latin origin. Critchley (1970) argues that the etymology is in fact Greek, and that this implies 'difficulty with words' rather than specifically with reading. There is general acceptance that the difficulty relates primarily to problems with written language skills, reading, writing and spelling,

rather than with speech, although late speech development has been noted by some writers (De Hirsch et al 1966). The fallacy of attempting to find a single aetiology or single symptom profile has been noted by Money (1962):

"It is not at all rare in psychological medicine, nor in other branches of medicine, that a disease should have no unique identifying sign, that uniqueness being in the pattern of signs that appear in contiguity, out of context, each sign in different intensities in the healthy. Specific Dyslexia is no exception in this respect ... the diagnosis of specific dyslexia will continue to not depend on a single tell-tale sign or signs, but on the clinical appraisal of the whole configuration of symptoms and test findings."

In an attempt to define dyslexia as an identifiable condition, several efforts have been made to provide an operational formula (Ingram et al 1970). Thomson (1979) developed a 'flow diagram' which took into account many of the possible causes of written language difficulties, and aided the clinician in making a diagnosis. (see Appendix). Cognitive profiles identified in tests of intelligence are discussed in the section on assessment.

In describing dyslexia, most writers refer to the fact that reading and spelling abilities are significantly below expectation. Associated problem areas may be linguistic and conceptional.

In an attempt to improve upon the definition (quoted earlier) by the World Federation of Neurology (1968), Critchley & Critchley (1978) offered a longer definition:

"Developmental Dyslexia:-

A learning disability which initially shows itself by difficulty in learning to read, and later by erratic spelling and by lack of facility in manipulating written as opposed to spoken words. The condition is cognitive in essence, and usually genetically determined.

It is not due to intellectual inadequacy or to lack of socio-cultural opportunity, or to faults in the technique of teaching, or to emotional factors, or to any known structural brain defect. It probably represents a specific maturational defect which tends to lessen as the child grows older, and is capable of considerable improvement, especially when appropriate remedial help is afforded at the earliest opportunity."

Hornsby & Miles (1979) argue for a distinctive dyslexic group, among whom may be found only minor variations (Miles 1978) the same constitutionally based pattern of learning difficulties, "possibly involving some kind of short-coming in immediate memory". Evidence for both these points have been found in the literature, together with support for the points made by Halitsky (1976), stressing that "Dyslexia is a syndrome of defects affecting all language functions ... in a different manifestation during the life-span of affected individuals ... its diagnosis depends on a clinical appraisal of the whole configuration of symptoms and test findings and not on a single tell-tale sign or signs." Several writers following Orton (1931) stress that spelling is a major factor in adult life, but there is also evidence to suggest that the learning differences, although manifest in language are "in the vast majority of cases, in learning itself." Young & Tyre (1983). Evidence in this study supports the contention that a dyslexic individual might be differentiated from a person with wider difficulties on the basis of specific constitutional and cognitive differences associated with short-term memory deficits, enduring spelling difficulties and a significant pattern on a test of personality.

The following description (Critchley & Critchley 1978) might be applicable to many of the subjects in this study:

"Eventually most dyslexic adults come to terms with their integral problems and accept them good humouredly or make adequate compensation. They will then have lost most of the frustration, the lack of self-confidence, the sense of inferiority or of bitterness which may have coloured their school days. They are able to take a detached view of their earlier difficulties, and by doing so are in a position to contribute much to our understanding of a dyslexic's dilemmas and their solutions."

For the purpose of this study, since it involved adults, the following definition has been adopted:

"Dyslexia is a specific language difficulty affecting spelling, reading and other written language skills; characterised by a discrepancy between attainment and intellectual potential, accompanied by evidence of constitutional cognitive differences."

Miles & Miles (1983) argue that the actual word 'dyslexia' is unimportant, compared with the need for recognition that a problem exists. Since the term 'Specific Learning Difficulty' has attained wide recognition, in most disciplines and recent legislation, the terms will be used as being synonymous throughout this study.

Summary

The 20th century has seen a virtual explosion in scientific research. In the field of language learning difficulties this seems to have been heralded by the recognition by writers such as Freud (1891) of the complex of associations, visual, auditory, tactile and kinesthetic. The early period was dominated by the works of two gentlemen. In Britain, the ophthalmologist Hinshelwood inspired interest. In America, Samuel Orton, a neurologist, not only wrote extensively but gave rise to a teaching method and the learned society which today bears his name.

Since the 1930s the British scene has been dominated by reports and legislation, which naturally tend to be rather 'conservative' in nature. The difficulty in finding a widely accepted definition of dyslexia has led to the term being criticised by some, and rejected by others. Regardless of terminology, there has been growing evidence that there are a group of children who have a 'specific learning difficulty'. This uneven distribution of reading ability suggests that some children continue to have difficulties which cannot be attributed to educational or environmental factors, lack of intelligence or emotional problems. Several factors have been observed in conjunction with this phenomenon, suggesting a nosological difficulty, often described as a syndrome which is constitutional in origin, and associated with cognitive differences.

The term 'specific learning difficulty' has found general acceptance, and is used here as synonymous with 'dyslexia'. For the purpose of this study, it was necessary to adopt a definition suitable for use with adults, who continue to have such written language problems. The following definition or description is put forward as being appropriate in the present study:

"Dyslexia is a specific language difficulty affecting spelling, reading and other written language skills, characterised by a discrepancy between attainment and intellectual potential, accompanied by evidence of constitutional cognitive differences."

CHAPTER 4

REVIEW OF RELATED RESEARCH 'FOLLOW-UP' STUDIES

REVIEW OF RELATED RESEARCH FOLLOW-UP STUDIES

"It is remarkable that despite the large number of dyslexic children who have been assessed, recorded and treated, there is little precise information concerning prognosis. Since 1959 there have been fewer than a dozen known attempts at a follow-up study of a series of dyslexics over 10 to 20 years, in order to determine outcome."

Critchley & Critchley 1978.

One of the reasons for the present study is the dearth of studies relating to the experiences of dyslexics in adult life. The purpose of this chapter is to give an overview of the major research studies involving adults with 'specific learning difficulties'. The majority of studies reviewed are longitudinal or follow-up studies. These seem mainly concerned with the prognosis for those who were first contacted while still at school. The aims of such studies are most often concerned with evaluating the efficacy of early intervention or different forms of remedial help. These studies have produced divergent conclusions (Benton 1978). The diversity of aims and populations studied may account for many of these differences. However, no studies of dyslexic students in adult life were found which relate to the problem as presented in this thesis. A wider review was therefore undertaken, which embraced many of the terms used as being synonymous with dyslexia; these include 'wordblindness' (Kussmaul 1877), 'congenital word blindness' (Morgan 1896), 'congenital symbol-amblyopia' (Claiborne 1906), 'development alexia' (Jackson 1906, Orton 1937, Chance 1913), 'congenital typholexia' (Variot & Lecomte 1906), 'amnesia visualis verbalis' (Witmex 1907), 'congenital alexia'

(Stephenson 1907), 'congenital dyslexia' (Rutherford 1909), 'analfabetia partialis' (Wolff 1916), 'adylexia' (Claparede 1917), 'strephosymbolia' (Orton 1928), 'constitutional dyslexia' (Skydsgaard 1942), 'specific dyslexia' (Hallgren 1950), 'specific reading disability' (Eustiss 1947, Bakwin & Bakwin 1966), 'gestalt blindness' (de Hirsch 1952, Bender 1959), 'specific language disability' (Gallagher 1960), 'primary reading retardation' (Rabinovitch 1968).

The problems surrounding an acceptable definition are frequently referred to (Rutter 1978, Eisenberg 1978, Mattis 1978). For this reason a clear distinction is made between studies dealing with adults, who acquired similar language difficulties as a result of brain insult, and those adults in whom the difficulty had been present since birth. The former have been categorised as suffering 'deep dyslexia' (Coltheart et al 1979), or 'acquired dyslexia' (Keeney 1971, Baddeley et al 1982, Jorm 1979a, Ellis 1979). The term 'developmental dyslexia' is often used to describe the second category, in whom the difficulty has been present since birth. In these cases the difficulty is thought to be "dependent upon fundamental cognitive disabilities which are frequently constitutional in origin", (Critchley 1970, Boder 1971). Rawson (1968) in her seminal work on adults employs the term 'developmental dyslexia' to describe:-

"A child may be considered dyslexic within this definition if his achievement in spoken language, reading, spelling, penmanship and perhaps other associated language skills, singularly or in combination, falls appreciably below expectation based on his age, physical condition, intellectual ability, and conventional educational opportunity.

This is approximately the definition used not only by S.T. Orton (1925), but more recently by Herman (1959), Gallagher (1960), Eisenberg, Money, Rabinovitch & Saunders in Money (1962) and Critchley (1964) ..."

Lantz and Liebes (1943) In what seems to be the first - so called - 'follow-up' study of non-readers, the ambiguous conclusions set the pattern for the often contradictory results subsequently reported. In their study of 33 non-reading boys in a San Francisco orphanage, Lantz and Liebes investigated several concomitant factors associated with the amount and type of educational assistance required, together with details of the group's status. The mean age at intervention was 8.7 years, and the mean IQ was 100.3; the study extended over 14 years, but details of the age at time of follow-up were not given. The main difficulty associated with learning to read is reported to have been 'failure to connect visual symbol and sound, lack of attention, and lack of self-reliance'. Remedial help was provided according to need, and ranged from $\frac{1}{2}$ hour per week or some 44 hours in total, to a staggering 1,371 hours. 68% of the children who grew up in the orphanage during this period (14 years) required no special educational assistance, but 24 of the group studied needed assistance in arithmetic, spelling, grammar, history and writing in the 7th and 8th grades. There was a high proportion of the children who showed signs of 'emotional maladjustments accompanying non-reading'. Despite the gloomy findings, it was reported that 27 subjects graduated from High School, while 6 were still attending High School, and a further 7 had gone on to College. Of the 19 subjects then working, no further

information was provided other than that 17 had completed High School, and the other two had 'dropped out' when they reached the limits of their abilities. The study's conclusion was that:-

"In the majority of cases, non-reading may be merely the original expression of the child's inability to respond adequately to average classroom instruction."

This leaves open the question of whether it is a failure of the child to learn, or a failure of the system to teach.

Ellehammer, Larsen and Rasch (1954) conducted a study of children and young adults, whom they describe as 'backward readers'. Hermann quotes the results of this study of 126 adults - of whom only 72 were actually contacted - mean age 24 years, revealing that:-

"Although reading ability was satisfactory or fairly satisfactory in most cases, their spelling ability was considerably poorer. One half could not spell as well as the average pupil in the 3rd normal grade, and some of these could not even attain the average for the 2nd normal grade.

These results show that the consequences of backward reading extend beyond the person's school days. The difficulties had not ameliorated despite several years special teaching, and this must strengthen the presumption of a specific disturbance of function in a considerable number of backward readers in schools."

Hermann (1959) in his medical study of word-blindness, included details of a study designed 'to obtain a clearer view of the influence of constitutional dyslexia on occupational training and adjustment'. Details were obtained from 541 adults who came to the Word-Blind Institute during the period August 1947 to June 1954. The figures revealed that an increasing number were coming to the Institute despite having received special teaching

earlier. Herman_n optimistically ascribed this to the difficulty being sufficiently 'stabilised', to the extent that with help the individuals would be able to take advantage of further education and technical courses. The surprising number listed as 'attending school' (44 subjects aged 20 or older) is understandable, in the light of Herman's suggestion that:-

"When their word-blindness had improved, they tended to go on to a training which required proficiency in reading and writing, such as nursing, technical school and commercial school."

Herman's table of data is included here in full (Table 1). When this was analysed using the British Registrar General's classification with 'students' being allocated to category 4 (as in the analysis of the writer's own data), the pattern suggests that language difficulties restrict access to higher socio-economic class. An analysis of the figures for those aged 20 and over reveals:-

Table 1.-

Socio-economic Class		1	2	3N	3M	4	5	
Age 20 - 24	(N = 218)	10	70	50	76	12	m = 4.0	
25 - 29	(N = 98)	11	26	27	28	6	m = 3.91	
30 plus	(N = 75)	8	25	19	6	17	m = 3.98	
Totals	(N = 391)	29	121	96	110	35		
%		7.5	31.0	29.5	28.1	8.9		

Hermann did not give details of how the adults referred to the Word-blind Centre we assessed, nor did he clarify what was meant by the term 'stabilised'. The implications of his work and the socio-economic distribution of students is that dyslexia continues to affect all aspects of their adult life, and Hermann concludes "that more severe congenital word-blindness is difficult to overcome".

TABLE 2

Word-blind adults seen at the Word-Blind Institute, Copenhagen, between 1947 and 1954.

Total	Status when first attending Institute	Born 1924 or earlier	Born 1925 to 1929	Born 1930 to 1934	Born 1935 or later
	Age	30+	25-29	20-24	15-19
84	Attending school	1	2	41	40
23	Institute of higher education entrance examination		1	2	2
	Students	1	10	2	
	Graduates	1	4		
16	Teacher training				
	Entrance examination			1	2
	Training College students	1	2	8	2
8	Kindergarten teachers	1	1	3	3
5	Other teacher training	1	3	1	
24	Nursing - student nurses	2	6	11	1
	Nurses	3	1		
5	Children's nurses		2	3	
48	Shop/commerce training post	2	3	18	14
	Shop/sales assistants	1	2	3	
	Higher rank posts	2	1	1	1
25	Office work - junior clerks		1	6	3
	Clerks	4	2	7	2
86	Skilled workers/apprentices		5	22	17
	Qualified	16	12	12	1
69	Unskilled workers/labourers	9	8	3	2
	Factory workers/storemen	4	6	6	2
	Labourers' lads, errand boys	1	3	6	19
47	Domestic work/domestic helps	1	4	15	16
	Housewives	7	4		
5	Art/journalism	3		2	
17	Army/Navy - conscripts		2	9	1
	NCO's and Officers		3	2	
5	Seamen/Fishermen	2	1		2
24	Farmworkers/farmers/market gardeners	2	3	11	8
17	Other occupations		4	10	3
33	No occupation	10	2	12	9
541		75	98	218	150

Hermam did not provide any data on intellectual ability or adult achievement levels. There was no clear explanation of the criteria used for including subjects in the study, except that they had all sought help at the Word-Blind Institute. No further analysis was made of the data provided, but Herman concludes:-

"Complete resolution of the symptoms of congenital word-blindness is rare, although its consequences in adult life are determined not only by the extent of the residual defect, but also by the demands made on the individual by his occupation."

Robinson and Smith (1962) reported their ten-year follow-up of clients previously enrolled in the University of Chicago Reading Clinic as ... "the first attempt to follow-up a sample of subjects about ten years after they were enrolled in the clinic". They explored the frequently assumed hypothesis that pupils who are retarded in reading never become competent readers. Forty-four subjects between the ages of 17 and 28 (\bar{m} = 24 years), with IQ's ranging from 85 to 147 with the median IQ being 120, were studied in their follow-up. Data revealed that only three subjects did not complete High School, while two were enrolled in a doctoral program and one had completed medical school. Fifteen of the subjects were still in College or University, and only one was unemployed. Those that were employed held responsible jobs, "in various occupations or careers, most of which were satisfying to the parents". The data regarding the subject's education, employment and reading habits forced the conclusion that retarded readers can become competent readers in later life if they have sufficient remedial tutoring. However,

this sample (like Rawson's) had a very biased IQ, possibly due to the proximity of the University, and the results may be a reflection of this biased IQ rather than the tutoring the subjects received. Foster (1972) suggests the overly optimistic conclusions may be due to the fact that their actual initial reading level (which was not reported) was within the limitations of their chronological age, though not reflective of their high IQ, and because of this the real severity of their disability would be in doubt. It should also be noted that only 15 subjects were interviewed personally, the remainder having been contacted by telephone or completing a questionnaire.

Rasmussen and Dunne (1962) reported on a longitudinal evaluation of a corrective reading program that had been developed for a Junior High School in a suburb of Detroit, Michigan. The study compared an experimental and control group of adolescent children over a period of five years. The results indicated that reading disability is a chronic condition that is ameliorated but not cured by correctional programmes.

Carter (1964) followed up a group of 35 persons, aged between 19 and 25 with IQ's from 90 to 115 who had been identified as disabled readers in the 7th to 8th grade (13 - 14 years). The thirty-five subjects were divided into two groups: Retarded Readers - those one or two years below grade level; and Non-Retarded Readers - those reading at least at grade level. At the follow-up by personal interview a larger proportion of retarded readers than non-retarded readers were found to have unskilled or semi-skilled jobs, and their occupational mobility was

horizontal rather than vertical. Of the Retarded Readers, 70% had 'dropped out' of school as compared with 10% in the non-retarded group, and over 70% of the Retarded Readers had semi-skilled or unskilled jobs and were considered 'non-adjusted'. Carter's conclusion was that:-

"The personal and social maladjustments which accompanied reading retardation in high school persist into adult life."

The validity of the questions used to determine 'adjustment' and 'non-adjustment', and status in vocational and social endeavours is questionable, and no measurement of adult reading ability or intellectual ability was made.

Silver and Hagin (1964) reported follow-up studies of 24 children who had been seen in a remedial reading programme at Bellevue Mental Hygiene Clinic, 10 to 12 years previous to the study. A control group of 11 subjects who did not have reading disabilities, but had behaviour disorders was used as comparison. The data was obtained by a re-examination of these 24 subjects whose mean age was 19, and whose IQ's ranged from 78 to 118 with a median of 105. Those subjects who, as children, evidenced neurological signs in addition to a reading disability, showed less improvement than those control subjects who were apparently free of neurological involvement. Fifteen of the reading disability group were described as adequate readers, whose reading quotient did not fall more than ten points below their adult IQ's on the WAIS. The authors conclude that their data, derived from neurological and perceptual assessment of their subjects, reveals that in spite of maturation, specific reading disability is a long-term problem in the life of the individual, and persists despite adequate

educational, vocational and social functioning. When the authors compared their developmental with their organic subgroups of reading disabilities, it was discovered that although the perceptual and neurological differences were not marked in childhood, they became apparent in adulthood. The subjects with organic reading disabilities retain perceptual difficulties into adulthood, while those with developmental reading disabilities recover partially or adopt cues that assist them in dealing with printed and spoken material. As children, the distribution of IQ's did not differ significantly between the reading disability groups and the control groups. As adults, the IQ's of the control group were found to be significantly higher ($P = <.01$) than those of the reading disability group. Silver and Hagin presented two further papers related to this study in 1966 and 1967. In the later paper they concluded that:-

"In spite of maturation in some areas, specific reading disability is a long-term problem in the life of an individual, the signs of which can be detected despite adequate educational, vocational and social functioning."

In another study on a similar population, but having conducted a follow-up only 3 years after assessment, Hinton and Knights (1971) came to similar conclusions: that both perceptual and behavioural difficulties persist into later life.

Balow and Bloomquist (1965) studied 32 young adult males (aged 20-26 years) who, when between the ages of 7 and 13, were initially studied at the University of Minnesota Psycho-Educational Clinic. At the time of the initial contact, none of the pupils had primary emotional problems and intelligence was controlled by including only those

pupils who had average range IQ's. The initial reading level was two to five years below age-grade expectations. Nearly all of the subjects had had sporadic instruction in remedial reading throughout their school years. Nine of the subjects completed the Gates Reading survey and a tape recorded version of the Minnesota Multiphasic Personality Inventory. Of the remainder, 14 subjects were contacted by telephone but declined to be tested, and on 9 subjects the data was obtained from near relatives. The authors concluded that males who are severely disabled in reading and who come from a middle-class metropolitan area will somehow attain average adult reading proficiency (which they define as approximately tenth grade).

"In fact, over the years a 'minor miracle' did develop in the ten to fifteen intervening years, most of these children who were initially near the end of elementary school and reading as if they were second-graders, somehow learned to read at or near the average adult level."

Most subjects graduated from high school, found semi-skilled or unskilled jobs over a wide range of occupations, and had neurotic type emotional disorders. These results, based on such a very small sample (the nine subjects who responded to interview and testing), leave in doubt their long-term applicability.

Morris (1966) conducted a study of the reading abilities achieved by pupils in schools in Kent. Her initial study of over 8,000 was reported (Morris 1959) and led to a second enquiry, which included a follow-up study on 98 selected pupils. The conclusions suggest that poor readers are affected by the same factors as other pupils, but "persistent reading failure is attributed to the cumulative effect of handicaps centred in the child, home and school".

Reading difficulties reduced the child's chances of entering grammar school, implying that "late beginners in reading are destined for secondary modern schools not only in fact but in the opinion of those responsible for their progress". More of these poor readers entered ESN schools, or became delinquents, and the majority became manual workers. The fact that reading difficulties persisted into adult life raised the question "whether more could be done to enable children who make a slow start with reading, to become effective readers and so eventually have a wider choice of occupations and a richer adult life".

Preston and Yarrington (1967) acknowledged that little is known about the educational and employment status of retarded readers, and explored the hypothesis that:-

"A typical sample of retarded readers after eight years fulfils educational and vocational roles similar to those fulfilled by their peers in the general population."

Information about the 50 subjects (44 boys and 6 girls) was based on their initial contact with the University of Pennsylvania Reading Clinic. At the time of initial contact their ages ranged from 6 to 17 years (\bar{m} = 12 years) and the IQ's between 53 and 123 (\bar{m} = 97.6). There were 13 non-readers, 20 with a reading age (RA) two or more grades below placement, 14 with RA between one and two grades below placement, and 3 with RA less than one grade below placement. Details of the possible relationship between Reading Age and IQ were not provided.

The information on present educational status, amount of education and present occupational status was obtained through telephone interviews. In most cases the information

was supplied by the subject's mother (N = 34) and by the subject in only 6 cases. These 50 cases were divided into three groups by age. The occupational status of those in the 15-17 year old group, and of the 22-26 year old group did not differ from the national population figures. However, in the 18-19 year age group, there was a significantly higher proportion in high school. "The slower pace of schooling thus reflected appeared as the most marked distinguishing characteristic of the subjects and was revealed also in the analysis of grades repeated." There was a higher than national drop-out rate from high school, and none of the subjects had plans for pursuing professional or graduate study. Their conclusion was that "a reading disability is a handicap and may be presumed on the basis of this study to slacken educational pace, limit academic aspirations and ultimate academic achievement, and consequently narrow vocational possibilities".

Howden (1967) reported on a nineteen year follow-up study of subjects who had tested in the 5th and 6th grade as part of her M.Ed. during 1948. Subjects who had attended the same school formed three groups, consisting of 9 - good readers, 22 - average/normal readers, and 22 - poor readers (which included four deviant readers). Subjects qualified for description as 'poor readers' if the childhood reading score was more than one standard deviation from the mean for his grade. Within the group of poor readers, three subgroups were identified: remedial candidates, educible mentally retarded, and those retarded in reading relative to Binet mental age, and the 4 'deviant' readers. Subjects were interviewed and tested when mean age was 30 years, and

in return a small payment was made. In 1948 the IQ range for the Average Readers was 90 - 124, the range for the Poor Readers was 59 - 120. The Gates Reading Survey and a structured interview approach were adopted, and although males outnumbered females at the lower level of reading attainment, no consistent sex differences were found in adult reading behaviour. Howden's conclusions suggest that variables affecting adult reading skill are operative by at least the fifth year of school life. Adults who were poor readers in childhood are likely to display the same disparity as in childhood between reading and intelligence. Although no correlations were found between participation in social or community affairs, there was a positive relation between adult and childhood reading patterns and parental social class. The general conclusion is therefore less optimistic than in some other studies. Howden concludes:-

"The handicap of poor reading ability may be mitigated but does not disappear once the poor reader has become an adult ... poor reading ability is still regarded as a hindrance to economic advancement and as a pitfall in social situations."

Rawson (1968) studied 56 boys who attended the Rose Valley Private School in Pennsylvania, for at least three years between 1930 and 1947. These 56 boys represented forty families. Rawson devised a 'language learning scale' in order to rank the boys according to their scores. Criteria for placement on this scale included:-

1. The initial failure of the boy to learn to read in the first year or two of reading instruction;
2. The types of errors made in reading, spelling, writing and in speech;
3. The learning response to special language teaching;
4. The presence of auditory or visual defects;

5. Confusion in lateral dominance;

6. Family history of language disability.

On the basis of these scores, the scores were ranked and placed in one of three categories:-

- (1) High language facility - non-dyslexic - 20 students
- (2) Medium language facility - non-dyslexic - 16 students
- (3) Low language facility - moderate dyslexic - 8 students
- severely dyslexic - 12 students

This appraisal suggests a high proportion of students at the school were dyslexic - over 30%. The classification does emphasise the fact that dyslexia is not an 'all or nothing' condition, but varies from mild to severe; it also indicates several factors associated with the difficulty and does not depend solely upon reading difficulty. Of the 44 families involved, 43 were Caucasian Protestant, 42 fathers were college graduates and in professional occupations, 43 mothers had completed at least high school; 16 families were in Warner's socio-economic Class I and 5 were in Class II. The Binet Scale was used to assess the boys' intelligence, these ranged from 94 - 185, with a mean of 130.8, and a median of 131.4. The data Rawson provides indicates that the following levels were attained by the dyslexic group before leaving Rose Valley: (Table 3)

N = 20	<u>Superior</u>	<u>Average</u>	<u>Inadequate</u>
	One year or more above grade	One year above to ½ year below	More than ½ year below
Reading	5	8	7
Spelling	1	1	18
Arithmetic	2	6	16

At the time of the study, the boys (now men) ranged from 26-40 years, mean age of 33.4 years. Rawson provides data obtained from personal interviews with 21 subjects, while

information was supplied by relatives for the remainder. Rawson assessed educational and occupational attainment, and concluded that there was no major differences. The 'low language facility' or dyslexic students completed 6.02 college and university years, compared with 5.69 for those in the 'medium' group, and 5.49 in the 'high language' group.

The occupational status of this dyslexic group is equally surprising:-

Doctors	2
Lawyers	1
College Professors	2
Research Scientists	2
Owner Medium Business	3
Middle Management	3
School Principal	1
Secondary School teacher - MA	1
Secondary School teacher - BA	2
Actor	1
Factory Foreman	1
Skilled Labourer in training	1
	<u>20</u>

When 'dyslexic boys' were paired with 'non-dyslexic' boys on the basis of matched age, education and occupation, a striking 21.9 point difference was found in childhood IQ. The higher scores as measured by the Binet Scale were achieved by the non-dyslexic group. Rawson concludes that:-

"Given average or better intelligence, physical normality and equivalent social and educational opportunity in both groups, differences in educational and vocational achievement by adulthood on the part of 'non-dyslexic boys' and 'dyslexic boys' so diagnosed between the ages of 6 and 12, will not be greater than could be explained by chance alone."

This highly optimistic study has been reviewed by Silver (1969) and most surveys of the literature, which are forced to conclude that the social and educational opportunity described is an advantageous one. The mean IQ was very high (130), and it is not clear whether the majority of.

the children, who will have comparatively lower IQ's and come from relatively less advantageous backgrounds in terms of social and educational opportunity, warrant equally optimistic conclusions.

Rawson equated her understanding to that of Rabinovitch, Herman, Critchley and others. Yet Rabinovitch (1962) believed that the majority of dyslexic children, even with the benefit of good remedial programmes, would do well to reach a functional reading level of approximately fifth grade. Herman (1959), in discussing adult dyslexia, states that "complete resolution of the symptoms of congenital word-blindness is rare ..."; Critchley's impressions are similar. The only hint of difficulties facing the adult dyslexic is contained in the section of Rawson's book relating to 'reading, spelling and penmanship'. Here there are significant correlations between adult skills and the 'language learning facility' rank. This suggests that despite the advantages enjoyed by these children, their language difficulties reached into and effected their adult lives.

Hardy (1968) studied 40 young adults (mean age 11 years, mean IQ 103.8) who had been referred to the London (Ontario) Education Clinic during the years 1957 to 1961. At the time of the follow-up (mean age 19 years), half of the subjects were employed and half were still attending school. The 40 subjects were divided into four broad categories with respect to clinical treatment (Hardy 1969):-

1. Those who overcame their learning difficulties (11 cases);
2. Those whose learning difficulties persisted (13 cases);

3. Those who experienced severe learning disabilities which persisted and were probably of neurological origin (10 cases);
4. Those with learning difficulties and social difficulties which persisted (6 cases).

The case studies presented revealed several factors that had a significant effect on the outcome of the clinical programme. The number and severity of deficits exhibited by the child affected his academic rehabilitation and it was found that reading gain was positively related to IQ. Children who had supporting and accepting families were more likely to succeed academically than those who were given no encouragement at home. Vocational and social adjustment was not beyond the reach of young people who were disabled readers, although 60% of the subjects were still retarded by 20 months or more. Those subjects that suffered from social as well as 'severe academic handicaps' had little chance of successful adjustment in any area. Of the 20 subjects who had left school, two were unemployed, and of the remainder (18), 55% were in unskilled or semi-skilled occupations. Despite the small size of the sample and their occupational status, she concludes that:-

"Although most severely disabled readers retain their difficulties in reading, and more especially in spelling, they are able to make adequate academic adjustments if appropriate educational programs are provided in school. It is possible also for them to obtain satisfactory vocational adjustment."

But despite remedial help, and making gains in reading, "these gains were not equal to their own individual expected grade levels, or to the gains made by students of comparable grade levels."

Koppitz (1971) reported on a five year follow-up study of 177 students who had been in a learning disabilities programme. Ages at follow-up varied from 11 to 16 years, and

although no adults were included, the results are interesting in relation to progress made. Four sub-groups were identified, and made no distinction between children whose difficulties were primarily due to neurological disfunction or to emotional problems. The intellectual ability range extended from the borderline defective to superior (70 - 120 plus). The categories included:-

Group A - dull children

Group B - children with poor reasoning and good memory

Group C - children with specific learning difficulties

Group D - children with emotional and behaviour problems.

Group C included dyslexic students, but Koppitz found that in spite of average intelligence (mean IQ 90) and five years of special class treatment, progress in reading, arithmetic and spelling was very poor. Progress in these subjects improved by between 1 and 2 years during this period. An unexpected result was the slightly better improvement made by the children in the 'dull' group. the S.L.D. (specific learning difficulties) students did not reintegrate successfully into regular classes. However, parental attitudes towards the learning disabilities programme was found to have a major influence on the child's attitude and progress in the special class. In view of the minimal gains made after five years of special class treatment, Koppitz thought it reasonable to suppose that defects in reading and spelling will remain into adult life.

Perlo (1971) provides one of the few reports on the effectiveness of remedial help with adults. Using the

Orton-Gillingham 'language therapy' approach, details are provided of some 32 cases. Unfortunately, results of the psychometric tests used at assessment are vague, and no retest data is available. The report is concerned with the effectiveness of the 'therapy', which at the rate of 3 hours of individual help per week, resulted in 'satisfactory' gains, although the authors concluded that treatment should be orientated towards prevention, preferably by the second grade.

Rackham (1972) carried out a study of 69 cases who had attended the ICAA Word Blind Centre in London. This study is of interest since it is one of the few works which deal with adults in Britain. Of the cases studied, 17 had left school. Assessment of this group was designed to explore whether their careers had been hindered by their disability. The information gathered from parents indicated that the majority continued to have difficulty with spelling, and ten parents considered that their children's careers had been hindered by their difficulties. Reference to repeated failure (5 times) of one subject to pass 'O' Level English, is a similar experience to that reported in many case histories. Rackham's general conclusions were:-

"Ten of the 17 had gone on to Further Education including two to University and a third was hoping for admission to University. One boy, having gone into farming and worked on three different farms, was hoping for entry to Agricultural College. Only five boys had gone straight into work and in two cases it was on a proper trainee basis with obvious improvement prospects ..."

Looking at this group as a whole it is noteworthy that there are virtually no failures. This raises the inevitable question as to whether only those with success stories reply to such an enquiry. Other possibilities are that this

was a socio-economically privileged group (Naidoo 1972), that the age of this group was an important factor, or that maturation had been at least partly responsible for the happier outcome than was at one time envisaged. The study was also undertaken in a period of relatively low unemployment.

Foster (1972) investigated the academic, social and vocational adjustments and achievements of 33 pupils who had been in a perceptual development programme. At the time of the follow-up, the subjects ranged in age from 12 to 20 years. All students admitted to the programme had been diagnosed as having learning disabilities, and six were diagnosed as being severely dyslexic. At follow-up, these students were found to have a reading ability at the 4.9 grade level and they also made least progress within the study group. Foster summarised the findings as follows:-

"Educationally we find that two-thirds of the students have attained at least a level of functional literacy (5.0 grade level), and are reading at or above their expectancy level. One-third of the subjects continued to have severe reading disabilities, but this group is comprised mainly of students who were diagnosed as severe dyslexics at the time they were admitted to the programme."

As in the study by Koppitz (1971), Foster found that:-

"The more positive the attitudes of the parents and subjects, the more positive was the social and academic adjustment."

Sadly, Foster concludes:-

"Vocational aspirations were positively related to their mental ability, but seem unrealistic for their present academic achievement level."

Saunders and Barker (1972). Studies of adults, other than follow-up studies, are particularly rare, partly since few

adults come forward for assessment during adult life, although they may have experienced congenital learning difficulties which went unrecognised during childhood. One of the few studies dealing with such adults was carried out in Bristol (England) by two psychiatrists. Using the World Federation of Neurology definition, the authors provided 7 case histories, based on assessment of primary reading and spelling difficulties. Assessment was achieved using the WAIS (Wechsler Adult Intelligence Scale) and Schonell Graded Word Reading and Spelling Tests. They found that all patients were very sensitive about their disability; patients attempted to conceal it from friends, relatives and colleagues, and their difficulties only emerged after intensive examination. Sensitivity due to their difficulties was a common cause of marital friction. Although free individual remedial help was offered, patients remained noticeably resistant to help.

Yule (1973). The paucity of British research in this field has been noted. However, the epidemiological study by Rutter, Tizard & Whitmore (1970), known as the 'Isle of Wight Study', resulted in several further analyses of the data collected. Yule (1969) had noted a relationship between reading difficulties and anti-social behaviour, but concluded on the basis of the available evidence that the "educational failure seems more frequently to precede the behavioural disturbance". In the present study, Yule (1973) followed up poor readers identified in the Isle of Wight study, some four to five years later. The results suggest that despite good intelligence, the children with specific reading retardation continued to have lasting

difficulties in reading and spelling. This report is included here since in the conclusion of his report Yule highlights the poor prognosis for such students:-

"It is clear from this preliminary report of the follow-up study of poor readers on the Isle of Wight that if a child has a severe reading problem at the age of 10, the chances are very high that he will remain handicapped in reading to the end of his school days. Just how handicapped depends upon what is the practical, functional meaning of having a reading age of only 9 years at the age of 14½ years of age. Clearly, this is a barrier to many academic pursuits, and has repercussions in many other social situations."

The British Council for Rehabilitation of the Disabled (1974) established a prestigious working party under Dr. J. Kershaw, which resulted in the report 'People with Dyslexia'. Although not a research study in the normal sense, it did take evidence from individuals and interested bodies, as well as collecting some 'case histories'. In the introduction there appears the following statement:-

"They are socially, educationally and emotionally disadvantaged in a manner which causes them such embarrassment and confusion that they would rather conceal their handicap than reveal it by seeking help. Indeed, we have been considerably distressed by the extent to which the evidence we have received has emphasised this latter point. Overall, there is a growing awareness of the importance of the ways in which a disability can lead to social handicap and disadvantage."

The report is made up of a series of numbered paragraphs and specific recommendations. In relation to students there is recognition that "to reach attainments that match his potential he will need to devote more time and effort than average to his studies." The other recommendations included suggests that dyslexic students should be given longer time to complete academic and technical

courses, that the authority providing the funding should extend the normal period, and that there should be a wider provision of 'study aids' and examination concessions. Similar recommendations were made concerning the employment of dyslexics. Increased awareness by careers advisors and employers is urged, both with a view to improving 'understanding', but also to reviewing career structures, provision of practical aids and possibly encouraging the individual to seek remedial help.

Kline C.L. and Kline C.L. (1975) reported on a study of 92 re-evaluated cases out of an initial sample of 571 children with dyslexia. The data provided relates to a wide age range (5-17 years) and between 3 months and 3 years remedial therapy before 're-examination'. The study is mainly concerned with indicating the efficacy of the Orton-Gillingham type of therapy, compared with the improvement achieved by control groups. This study, although optimistic about gains made following intensive therapy, relates only to school children over a comparatively short period of time, and even then is forced to conclude:

"We have learned that older children present more complications ... to ensure success, continued support, consultation and ongoing training is essential."

Frauenheim (1975) studied a group of 40 male dyslexics who as boys had been diagnosed as dyslexic at the Hawthorn Centre. The mean age at the diagnosis was 11.6 years (range 8-15 years), mean IQ 94, and after the lapse of some 10.3 years the subjects were interviewed when their ages ranged from 18 to 31 years (mean 21.10). This follow-up study is particularly interesting since the tests of

reading proficiency and academic achievement (reading, spelling and arithmetic) were essentially the same as used in the initial diagnosis. Frauenheim's findings were less optimistic, since all subjects remained seriously retarded in reading, and this did not relate significantly either to the age at diagnosis or amount of remedial help received. Similarly, all subjects remained handicapped in spelling, reading and arithmetic, with spelling being the most seriously impaired area. This had meant that occupational and educational ambitions had to be compromised. Difficulties limited occupational choice, so that 80% held jobs in semi-skilled or unskilled classifications or were unemployed. There were no college graduates, although the majority had graduated from high school. This study supported Critchley's (1970) impression that "disorders of writing are always considerable in cases of developmental dyslexia though they have not attracted the same attention ...". Frauenheim also investigated 'adaptive considerations'. Support was found for Rosenthal's (1974) findings that those children from families where dyslexia was not clearly understood had a lower level of self-esteem. "It was noted that 88% of the subjects have a relatively poor understanding of their problem and persist in projecting blame onto secondary factors, often of a self-devaluing nature". Frauenheim's general conclusion was that:-

"It was found that dyslexia presents a pervasive influence on the lives of subjects. The need to keep others from discovering their problem was pronounced."

In a published resume of his thesis, Frauenheim (1978) refers to the limited academic growth of 1.3 years during

the 10 years between diagnosis and follow-up and summarises his findings:-

"The reading skills evidenced by subjects and their performance on spelling and arithmetic measures, indicate that they continue to experience many of the same problems that they did in childhood. The entire group, for example, still has trouble with word reversals ... spelling remains the most serious area of impairment for 80% of the subjects, with residual problems noted in arithmetic."

Frauenheim has continued to study this group, and in his most recent paper (Frauenheim & Hecherl 1983) he reports on 11 subjects some 17 years after initial assessment. The mean age was 27 (range 25-30). Psychological and educational tests were given as well as an extensive interview. Although this paper deals mainly with 'groupings' within the psychological tests (WISC/WAIS-R) and a comparison with earlier scores on the achievement tests, the conclusions are similar to those of earlier reports suggesting that:-

"Relatively little progress or change in basic academic skills has occurred over a seventeen year period, despite some attempts at specific remediation. Moreover, skill deficits and/or errors made during test performance were similar to those evidenced at the time of diagnosis."

Trites and Fiedorowicz (1976) conducted a study on children, which is of interest since they were concerned about older students and quote Spreen (1970): "at the present time we know nothing about the further development of poor readers, treated or untreated, beyond Elementary School and Junior High School level". Their review of the literature concluded that follow-up studies might be divided into two categories:-

- a) those which conclude a favourable outcome in adulthood;
- b) those which point to a persistence of reading disability.

This study provides data obtained on a battery of tests administered to 27 dyslexic boys, a matched group of 10 girls, and a further population of 10 boys whose reading difficulties were secondary to neurological disease. Although the mean period between test and re-test was 3 years, and the mean age at re-test was 14 years, they did find that there was an improvement in reading, spelling and arithmetic grade scores of all three groups on re-testing. This increase did not keep pace with the time interval and thus there was a general drop in percentile placement. Their conclusions fell into the (b) category, suggesting that the difficulties persist over time.

"Results of this study point strongly toward the conclusion that in subjects with specific reading disabilities, the deficits not only persist with age, but tend to grow larger relative to their age and grade placement."

Halitsky (1976) undertook a study of 50 male adolescents at a New York residential treatment centre. They were screened using a battery of 'spelling and handwriting tests'. The ages ranged from 13-18 years, and as well as being matched for age, they were matched on IQ range 85-130. Using measures of handwriting, severe spelling retardation (3 or more years below grade level) and silent reading achievement, they were divided into two groups on the basis of Silent Reading achievement. Halitsky described the Dyslexic group as having difficulties in all three spheres; the other group, described as Residual Dyslexics, had achieved at least grade level on reading but continued to have difficulty in spelling.

and writing. The study of cognitive variables was divided into two parts. Using the criteria of silent reading ability, she compared Dyslexic and Residual Dyslexic students and concluded that there were no significant differences in perceptual ability. The Residual Dyslexics did show significantly greater cognitive activity, being more flexible in 'shifting set', 'deriving meaning from reduced clues' and in 'searching a field containing irrelevant distractions'. In the second part of this study Halitsky attempted to establish the existence of a 'compensated form' of dyslexia. The criteria was based on spelling and handwriting. Her prediction that this group of Residual Dyslexics (in compensated form) would make more errors and take longer when reading aloud, when compared with non-dyslexics was supported. Unfortunately, the population tested were all emotionally disturbed adolescents; it is not clear about what steps were taken to eliminate individuals whose emotional state was a contributory cause of the differences used when apportioning individuals to groups, or in the control group. Halitsky's argument that some dyslexics will continue to experience difficulty with spelling is supported by clinical, autobiographical and references in the literature (Gallagher 1963, Hearn 1969, and Critchley 1970). The conclusions suggest that the criteria and techniques of diagnosis should vary with age, and that spelling and handwriting are critical areas in the diagnosis.

Ackerman et al (1977a & 1977b) conducted a follow-up study on 63 learning disabled boys seen between 1967/8 (Ackerman et al 1971a and 1971b). These subjects were reassessed when fourteen years old, when it was concluded that "inter-

vention methods employed were not sufficient to alter the growth trajectory" and the group remained seriously retarded on tests of reading, spelling and arithmetic. Although younger than the present population, the study is of interest since it found a high correlation between the WISC and WRAT tests, and a sub-test profile (ACID) on the WISC similar to that adopted in this study. The conclusions stress the need for strategies to improve 'deliberate learning' of specific tasks.

"We now suspect that many learning disabled children will be learning disabled adults, but the disability will not be nearly so crippling when they are no longer required day in and day out to engage in deliberate learning of symbolic material."

Satz, Taylor, Friel & Fletcher (1978) reported on a follow-up study which, like those carried out by Silver & Hagin (1964, 1966 and 1967), have studied the same population at three successive stages. In this latest paper, Satz & Friel (1973, 1974, 1975, and 1976) review their findings to date in the context of other research on the effectiveness of remedial programmes over periods of up to six years. Although this study is still concerned with school children, their conclusions are similar to those reported by Rasmussen and Dunne (1962).

"These findings while generally discouraging for children having reading problems in early grades, are compatible with four recent longitudinal follow-up studies (Muehl & Forell 1973, Trites & Fiedorowicz 1976, Yule & Rutter 1976, Rourke & Orr 1977). Reading problems identified during childhood continue to persist during adolescence. It is unclear as to whether the persistence of the reading disorder in these children is due to secondary emotional problems or merely to a failure of our educational system to help them sooner."

Gottesman (1979) followed the course of reading achievement over a five to seven year period. In this group of 43 children, whose ages ranged from 12 to 21 at the time of retesting, 91% came from lower class (Class IV or V) backgrounds. The group made very small gains in reading achievement over time, (approx. 4 months per year as noted in an earlier study - Gottesman et al 1975), and is seen as supporting the premise that academically related deficits persist over time in learning disabled populations.

Zangwill (1982) in conjunction with the Cambridge Specific Learning Disabilities Group reported on a follow-up study of children originally assessed at the Invalid Children's Aid Association's 'Word Blind Centre' in London. The Centre had closed in 1972, but from the case records some 300 possible subjects were identified. The final group of 75 subjects, 68 male and 7 female, were interviewed in London or Cambridge. The intellectual abilities at the time of the original assessment were based on the WISC (Wechsler Intelligence Scale for Children) with a mean Full Scale IQ of 114 (range 91 to 138). At the interview the mean age was 23.3 years (range 18.2 to 30.4 years), and of this group 44 were former pupils at the Centre and 31 had only been assessed. The study aimed to assess information about the subject's current educational and psychological competence, together with details of their occupational record. The interview was semi-structured, and augmented by a spelling and reading test. Test results indicated:- Table 4.

<u>Spelling (age level)</u>		<u>Reading</u>	
13 years and above	14%	Normal Readers	42%
Age 11 to 13	42%	Mildly impaired	45%
Age below 11 years	44%	Severely impaired	13%

Educationally the numbers attending state and independent schools were very close. 69% obtained one or more passes in 'O' Level GCE exams, although English proved far more difficult than Mathematics. One third received limited concessions in these exams, and 27 went on to obtain passed at 'A' Level. 'An appreciable number' went on to obtain technical qualifications by sitting City & Guilds examinations, while 13 were still studying for ONC and HND courses. 16 subjects, or 21% went on to Higher Education, of the 12 who had completed courses, 7 had obtained a Bachelors Degree (6 at 2.2, one 'pass'), There were more concessions made available in Higher Education, including 'unlimited time', amanuensis, extra time and typing.

Aetiological factors were studied and conclude that 64 subjects had close relatives who had similar difficulties. Less than 20% reported a mild stammer or poor motor co-ordination, and 23% had difficulties in mispronunciation. There was no support for the hypothesis that the difficulty is associated with being left-handed, although there was a high incidence of ambilaterality. The type, duration and source of remedial help varied considerably throughout the group. A comparison of Word Blind Centre 'pupils' and 'non-pupils' led the researchers to the conclusion that:-

"Whereas substantial remedial teaching does appear to result in permanent gains in reading skill, substantial remedial teaching does not appear to result in permanent spelling gains."

In terms of Occupational record there was a 'downward shift' between father and son, which it was felt indicated a move towards occupations involving a lower dependence upon verbal skills.

The Association for Children and Adults with Learning Disabilities (ACLD 1982) through their Vocational Committee, conducted a postal survey of L.D. adults. The Association was formed in 1964 following the use of the term 'learning disability' by Kirk & Bateman (1962). The effect of their work was to focus attention on the educational needs of children and adolescents, and away from the medical model and issues of aetiology and brain function. Several terms are covered by L.D., including Specific Learning Disabilities (SLD), Minimal Brain Dysfunction (MBD) and Hyperkinetic Reaction Syndrome (HKS) - (see Adamson & Adamson 1979, Alley & Deshler 1979). Writers such as Farnham-Diggory (1978) hold the view that this 'over-inclusiveness' will diminish, but at the time of this survey includes the wide range of difficulties highlighted by Fry's study of terminology.

Out of a total of 600 replies, 562 were analysed by Prof. C. Cook into 5 groups based on age. Each question was on the basis of multiple choice with 4-5 possible answers per question. The questions covered details about education, employment, medical, dietary, social and economic factors, counselling and behavioural modification, co-ordination and psychiatric treatment. The results to 58 questions are provided. Ages ranged from 18 to 36+, 207 being under 21, 355 people 21 years and over replied.

The first part (ACLD 1982a) tabulates questions and answers. The majority of questionnaires being completed by parents (339), with only 148 L.D. adults submitting replies. A total of 207 questionnaires were received from ACLD members. The male/female ratio was 2:1, the vast majority having been diagnosed by one of three professionals (in descending order),

psychologist, educator and physician, between the ages of 6 to 12 years.

The second part is an analysis of the tabulated data (ACLD 1982b) listing as the factors which had the 'most valuable or significant effect', the 'least valuable or significant effect', and factors having 'detrimental or destructive effect'. An analysis of areas where L.D. individuals desire more assistance reveals that 'Personal Development' is the main area, and the main need is for 'social skills'. A further analysis of 'what happened to L.D. adults who have been in trouble with the Law' was made, but this deals with only 96 (17%) of the replies.

The third and final part of the survey (ACLD 1982c) dealt with the employment status of 247 respondents, being 48% of total replies. 31% were still attending 'school', and 18% 'presumed to be idle'. Of those employed, by far the largest percentage, 23.5%, were unskilled labourers, only 19% were listed as being in skilled service trades, while no group accounted for more than 10%. Summarising this Survey indicates that although the population questioned are presumed to include a wider range and severity of difficulties, the responses are numerically similar to other studies. Remedial help and support from teachers and family are seen as positive aspects, while social skills, career development and self-confidence remain spheres which the Learning Disabled adult has yet to develop.

Gottfredson, Finucci & Child (1983). This latest study fulfils many of the criteria outlined by Herjanic & Penick (1972) which were lacking in earlier studies. It is large, involving two populations of approx. 400 subjects. The

dyslexic subjects, drawn from the Gow School in New York, are matched with a control group from the Gilman School which has similar socioeconomic and IQ characteristics. The main statistical analysis is made on the basis of the school records, adult information being obtained by questionnaire. Subjects range in age from 16 to 60 and occupationally were compared with their fathers, and the national Census figures as well as the control group. The data indicates that the subjects were of Above Average Intelligence ($\bar{m} = 118$) but 2-3 years behind grade level in reading, and four years behind on spelling. The conclusions were that the dyslexic subjects suffered severe effects in terms of educational attainment, with fewer subjects obtaining first or higher degrees, and there were more blue collar workers among the severely disabled.

"Obtaining a professional job was associated with higher educational levels and having a professional father. Data on job requirements collected from the control men showed that reading, writing and educational credentials are cited as critical to good job performance by twice as many professional as managers or salesmen, but that non-academic competencies such as taking initiative or responsibility or being persuasive or competitive are more critical in management or sales work."

As expected, dyslexic men were more often teachers or managers, and this is seen as indicating that they achieve success through a different route, rather than being less successful than their peers. The vocational implications of this are seen as indicating that:-

"There are often other, more important requirements ... skills such as persuasiveness, taking initiatives, and thinking of new approaches to problems, which are not dependent upon reading ability. Stressing the value of these other skills, many of which are certainly within the reach of the dyslexic youngster, should in itself help to promote their confidence, and their family's confidence, in their abilities to succeed."

Summary

Despite a considerable growth in the number of studies concerning childhood language learning difficulties, the difficulties faced by adults have not received the same attention. In Britain the wider needs of disabled adults were being dealt with in the Disabled Persons (Employment) Act 1949, and the Chronically Sick and Disabled Persons Act 1970. Regrettably, the broader recommendation of successive reports (The Russell Report 1973, the Tizard Report 1972, the Bullock Report 1975 and the Warnock Report 1978) have made little impact on the provision for adults with specific learning difficulties. The need for further research in the field of education handicapped adults continues to be urged by bodies such as the Further Education Curriculum Review & Development Unit (1981), the National Bureau for Handicapped Students (1981), and Tansley & Pankhurst (1981). This need is further reinforced by this review which was only able to find two British studies (Saunders & Bowker 1972, and Zangwill 1982).

The conclusions reached in the studies reviewed differ considerably. The more optimistic studies (Robinson & Smith 1962, Rawson 1968) seem to be based on occupational and social adjustment of subjects with superior levels of intellect who were favoured by support from privileged socioeconomic background and the special help provided in private schools. Many studies involve methodological differences, using small atypical samples, different criteria for inclusion in the study and no or inadequate indices of adult achievement. Few studies have control groups, there is little distinction between mild and severe difficulties, and often no attention to intervening variables

such as remediation, vocational or socioeconomic factors. There are few studies which make suggestions about how the adult might cope with a learning difficulty (Charnley & Jones 1979, Alley & Deshler 1979, Wiig 1972, and Cordoni 1982). Vocational guidance is even scarcer and likely to be limited to that available through the Manpower Services Commission (based on DRO GUIDE No.16, 1976) or the REHAB Report (1974) or King (1979). The majority of studies reviewed conclude that dyslexic type language difficulties do persist into adult life (Hagger 1968, Herjanic & Penick 1972, Spreen 1982). There seems to be general agreement and support from the literature with Vernon's (1976) summary that "in the most severe cases the disability would seem to be permanent, at least as regards spelling and the most advanced stages of reading". For the individual the effects may include limited academic achievement, economic hardship, restricted vocational choice, emotional stress and loss of self-esteem (Witty 1950 and Beare 1975). For the community this represents a tragic waste of talent and the possibility of anti-social behaviour.

"Emotional factors of apathy, failure, loss of confidence and loss of initiative, begin to influence mental attitudes in other scholastic fields, so that finally the pupil is impelled to look for compensatory forms of behaviour which will provide interest and achievement, and at the same time attract the attention of others. Not unnaturally, some of these activities are anti-social."

Schonell (1952) quoted in Hagger (1968)

"Within the existing educational systems ... otherwise able students experience difficulty in learning to read. This difficulty is of sufficient severity to impair seriously the overall learning experience of these students and their ultimate usefulness and adaptability to a modern society ... A student's initial failure in learning to read can have enormous consequences in terms of emotional maladjustment, tendency toward delinquency, likelihood

of becoming a dropout, and difficulty
in obtaining employment. The economic
loss to the nation ... is incalculable."

U.S. National Advisory Committee on
Dyslexia and Related Disorders (1969).

DYSLEXIC STUDENTS IN HIGHER EDUCATION

Reports concerning adults that most frequently occur in the literature may simblistically be divided into three categories:

1. Those related to intervention (counselling or teaching).
2. The next most common group are reports in the form of case studies.
3. A small but increasing number of studies have been concerned with long term follow-up studies into adult life.

Without more details of adults who choose to enter tertiary education there are problems of how to advise staff, whether concessions are appropriate, and how students might be best advised. This was part of the problem facing the Open University, which led to a Co-ordinating Committee being established in 1975 (Hales 1976) which took evidence from interested parties such as the British Dyslexia Association and reviewed the findings of the Kershaw Committee (REHAB 1974). One of the main recommendations was that there should be more research in this field.

At the start of the present research there was a need to undertake two fact finding exercises. Firstly there was a need to find out about the experiences of students with a dyslexic type difficulty. In order to find out from students what their experiences were, and the extent to which the problem affected their studies a Pilot Study was

carried out within the Open University. This study sought to find out both the nature of problems faced by students, and to identify areas for further study. The second study was an attempt to identify the number of students who were known to be dyslexic in the British University system, and to compile details of the provisions made for them. This involved sending out a standard questionnaire to all Universities, from which the reported findings were compiled. This survey was intended to place the 'problem in context from the institutions'view point.

CHAPTER 5

THE PILOT STUDY

THE PILOT STUDY

"In the area of listening the L.D. student has a short attention span. He tends to lose the gist of long lectures, to be unable to select important details from what he hears, and to forget what he hears. In the area of writing, the L.D. student has problems with the correct usage, difficulty with the mechanics, especially spelling, and difficulty in maintaining interest in the kind of writing assigned to him."

(Bosson 1967).

A century has elapsed since a specific learning difficulty in children was first described as dyslexia (Berlin 1887). Fifty years have elapsed since the original personal account of the difficulty in adult life (Anonymous 1936) was published. In Britain "official" recognition that the difficulty existed in adults came with reference to 'acute dyslexia' in the Chronically Sick and Disabled Persons Act (1970) and in the report 'People with Dyslexia' by Kershaw (1974).

"During the 1970's it became increasingly apparent that provision for dyslexic students in further and higher education was inadequate or developed on an ad hoc basis according to no stable parameters."

(Hales & Gauntlett 1981).

In 1975 the Co-ordinating Committee for Disabled Students of the Open University set up a Working Party to consider the problem of dyslexic students. Having sought advice from many knowledgeable people in the field, it produced a Final Report in October 1976 (Hales 1976). The report made recommendations about assessment, identification, assistance within the Open University, and in its conclusions observed that "the literature on the adult dyslexic is meagre and we are therefore not able to base our suggestions and conclusions on the results of any extensive research."

The lack of such research is evident from the British literature, which frequently makes reference to work undertaken in the United States. This was a factor considered by the City University (London) when deciding to award the N'IONS Travel Bursary, which enabled the writer to visit nine major centres in the U.S.A. and Canada; proceeded by visits to the major centres in Britain (Gauntlett 1977). While in the United States considerable interest was expressed about the work being undertaken in Britain, and the future facing dyslexic adults. One of the lectures on this latter subject, given at San Francisco State University was subsequently published (Gauntlett 1981). Interest in dyslexic type difficulties, combined with experience as an Open University undergraduate student, led to the present research study and a preceding pilot study.

The Aims of the Pilot Study

There were three stated aims of the Pilot Study:-

- a) to acquire information regarding the experiences of adult dyslexics in higher education;
- b) to investigate the interaction between such adults and the Open University;
- c) to investigate ways in which the University might help such students.

The Design

Following discussions with the Deputy Director of the Open University, London Region, it was decided to seek information using a postal questionnaire. This would be sent to mature students (defined as over 25 years of age) who were following courses with the Open University. Only subjects who had become aware of the specific nature of their learning difficulties since leaving school were

included, in an attempt to exclude variables such as the nature or extent of remedial help. Although subjects might have been aware of a learning difficulty at an earlier age, it was hoped the data collected would deal with those students who reached adult life without realising that their specific difficulties might be described as dyslexia.

Subjects came forward as a result of a letter published in the Open University student newsletter "Sesame".

This appealed for Open University students to contact the writer by letter or telephone if they were prepared to complete a questionnaire.

The Questionnaire

The Questionnaire was sent to sixteen people who made contact. It sought information in nine areas:-

1. Personal details.
2. Age at which respondent became aware/
were assessed.
3. Aspects surrounding birth and childhood.
4. Aspects of an hereditary and constitutional influence.
5. School experience.
6. Effect of dyslexia on general life
and career.
7. Effect of diagnosis.
8. Attitude encountered within the Open
University.
9. Suggestions for consideration by the
Open University.

The Replies

This study was based on the replies from 12 Open University students. In view of the fact that volunteers were

requested to reply using the very medium of communication with which they claimed to experience difficulty, the response was encouraging; although too few to make statistical analysis worthwhile.

Subjects were geographically distributed throughout England; there were no replies from Wales or Scotland. There were six male and six female subjects.

Question No.1: Whether self-assessed or professionally assessed.

Four subjects had been professionally assessed, a further six subjects were self-assessed but had qualifications in teaching, nursing or held a degree. Of the two remaining subjects, who were self-assessed, one was seeking a professional assessment.

Question No.2: Age at which subjects became aware of concept as relating to them or of professional assessment.

Range 29 - 45 years. Mean 35.5 years.

Question No.3: On aspects related to Birth and Childhood.

4 subjects (30%) indicated that there were circumstances which might have been contributory factors. These referred to lateness developing speech, a difficult birth and poor nutrition.

Question No.4: Hereditary and constitutional aspects.

Only one subject did not record constitutional factors. 83% recorded mixed laterality - and in one case total left side dominance. There was only one report of a father having similar difficulties.

Question No.5: School experience.

11 subjects reported unsatisfactory school experience

to some degree, varying from being classified ESN for a time to the most common reports of poor spelling/reading and maths, with remarks like 'careless' or 'should try harder'. All subjects reported experiences that might be reported by any dyslexic child with language learning problems, poor spelling, slow reading, dreading reading aloud and poor maths. The effect on their childhood ranged from hatred of school to a feeling of being inferior.

Question No.6: The effect on the subject's later life and choice of career.

Only one subject made no report. The other 11 reported that their life had been influenced in some way. Talking does not seem to have presented a barrier, but writing (spelling in particular) resulted in several subjects reporting taking practical, scientific or engineering subjects rather than subjects requiring higher levels of written language ability. This was reflected in the fact that when some respondents were forced (by promotion, for instance) into situations where writing was the medium of expression, they were not only embarrassed but this detrimentally affected their careers.

Question No.7: The effect of diagnosis and/or assessment.

This was generally reported as being one of relief. This stemmed from the fact that the concept of dyslexia carried with it the reassurance that language difficulties were not due to general lack of intelligence. In practical terms, assessment was a psychological aid, reportedly inspiring respondents actually to take Open University courses in a quest for self-

actualisation. One subject, however, reported being disappointed that the Open University itself did not help in overcoming the problem. Another subject was concerned about the correlation with inherited aspects and how this might affect his son.

Question No.8: The attitude of the Open University.

This is epitomised for most students by the attitude of their tutors. It is at best erratic, often described as causing "great distress". One subject reported wondering if it was worth continuing in the face of caustic criticism.

A professionally assessed student reported no responses to his notifying the Open University. Despite submitting C39's, and informing tutors for the last three years, he has still not had the courtesy of an acknowledgement or any offer of help/concessions. Attitudes between tutors teaching the same course vary so that a sympathetic course tutor may be flatly contradicted by the tutor at a Summer School.

Many students reported that the more language orientated the course, (i.e. Arts and Social Sciences), the less tolerant they were, to the extent that students had been told "someone who can't spell should not be awarded a degree". Another student reported being advised to give up his present Open University course and seek psychiatric help before re-registering.

Question No.9: Points put forward for the Open University to consider.

These concentrated on two main aspects:-

- a) that tutors should know about Dyslexia (or Specific Language Learning Difficulties);

- b) that T.M.A.'s and Examinations should be marked for content and that spelling errors should be ignored.

Subjects who have been used to having their spouses check T.M.A.'s or even type them, were especially worried about Examinations, claiming that they need to know twice as much as their contemporaries to gain a similar examination mark.

Vivas were requested by some subjects and, if optional, would be welcome, especially in highly literary examinations where students take longer to read the paper and to compose answers. More time in Examinations was seen as a double-edged sword, but would be welcomed by the majority. The option of typing papers was requested.

Taped material was mentioned by several subjects, and with taped courses being made for the Blind and Visually Handicapped students, this service would be welcomed if extended to those with perceptual difficulties. One unexpected suggestion was that the Open University should advise on courses which might be 'unsuitable' for dyslexic students.

It was urged that the Open University should make itself aware of whether a student was dyslexic or suffered from any problems; this did not seem to have been standard practice in the subjects' experience.

When the Open University is notified, the records did not appear to be integrated at national, regional or tutor level. As a result, subjects felt they had to draw their difficulties to the attention of staff at the start of each course. It was requested that the Open University acknowledge the existence of Dyslexia,

and include mention of it in its courses. This applied in particular to the courses PE231, P251, E362, E201, DE206 (which are mainly educational). Although making a plea for recognition of Dyslexia, it was also stressed that this should not be a bar to admission.

Summary

This pilot study, involving six male and six female students with the Open University, served to throw some light on the common experiences of adults who, after leaving school, have discovered that they are Dyslexic. The adverse effect this had on their school life and career decisions was touched upon, as was the positive effect of diagnosis. No firm conclusion could be drawn about the incidence of Dyslexia in the University, but it is clear that the experiences of both professionally and self-assessed students are essentially similar.

The relationship between the subjects and the Open University was chequered by an uneven pattern of response, often lacking in sympathy or understanding. The study drew together several suggestions which it was hoped that the University would consider. These referred to the attitude of tutors, a plea that work should be marked for content and not presentation (spelling), that taped material be made available and that vivas and/or more time be allowed in Examinations. Advice about suitable courses, and the mention of Dyslexia in appropriate courses was requested, stressing, however, that Dyslexia should not be a bar to entry or progress in the Open University.

From this investigation it would seem that for many of

these students, their studying with the Open University is a final attempt to achieve self-actualization despite academic compromise.

The Open University has to rely upon distance learning material which is of necessity limited in the forms it can take. Thus students with Specific Learning Difficulty or Dyslexia experience special problems.

Since the majority of information is in the form of written texts and extracts, to which a written response is expected in the form of Tutor Marked "Assignments" and conventional examinations. Special attention should be given to the needs of this group who may have already experienced problems due to their written language difficulties when at school, to the extent that they may have been denied the chance of continuing on to Further or Higher Education. If the Open University is to be truly 'open' to all, it should be careful not to exclude one particular group who have problems assimilating or evidencing understanding in the conventional written form.

CHAPTER 6

AN INVESTIGATION INTO UNIVERSITY PROVISION FOR DYSLEXIC STUDENTS

AN INVESTIGATION INTO UNIVERSITY PROVISION FOR DYSLEXIC STUDENTS.

Introduction

In 1973 the Russell report on Adult Education urged the systematic expansion of adult education to include the handicapped, and went on to recommend:-

1. Special provision for identified groups of disadvantaged adults;
2. Training for those making the provision.

In a survey in the academic year 1972/73, carried out by the National Innovations Centre (NIC 1974), it was found that there were on average 2 disabled students per 1,000 students in Universities, and 8 disabled per 1,000 at Polytechnics. This compared with the estimated 9 disabled per 1,000 in the population as a whole (HMSO 1970). One of the main recommendations from this enquiry (NIC 1974) was that:-

"Universities and Polytechnics should put their procedures for dealing with disabled students on a systematic basis from the admission stage through to assistance with finding employment."

Recent surveys have indicated that attitudes towards students with special educational needs are changing although it is generally concluded that provision is still inadequate. (Bennett 1978, NATFHE 1978, National Council for Special Education 1975). Pankhurst & McAllister (1980) observed that:-

"Opportunity for further and higher education may depend more on accident of location than on any other factor."

In May 1980 the British Dyslexia Association produced a pamphlet entitled "Dyslexic Applicants for Admission to Universities and Institutes of Higher Education" which

they circulated to all Universities. This they followed up with a survey of the provision available, and a year later a second survey was undertaken of Colleges and Polytechnics (British Dyslexia Association 1981).

The Survey

In order to compare the experiences of dyslexic students in British Universities, a letter was sent to all the Universities in the Universities Central Council on Admissions (UCCA) as well as the Universities of Buckingham, the Cranfield Institute of Technology and the Open University. The letter was on Open University headed paper and indicated that it came from the Institute of Educational Technology, being signed by both Hales and Gauntlett. The letter sought information under the following headings:-

1. How many 'recognised' dyslexics have been given a place in the current academic year? (By 'recognised' we mean students whose dyslexia has been professionally diagnosed.)
2. Is there within the University a person with practical experience of tutoring or advising dyslexics?
3. What advice has been given by Selectors who accept dyslexic candidates to staff who are to teach these students?
4. Will any special measures be taken over the terminal and sessional examinations of dyslexic students? Any details are useful.
5. How many dyslexics are known to be in your student body at present?
6. In cases where a student is suspected of being dyslexic, what steps, if any, are taken to obtain professional assessment and experienced advice?

Replies to Specific Questions

Question 1. The Universities were asked how many professionally assessed dyslexic students had been given

places in that academic year. The replies revealed that 43 dyslexic students had been admitted during that academic year. Distribution was uneven with some Universities admitting only one dyslexic student while others replied that they had admitted 12. The majority of Universities indicated that they had no centralised record of dyslexic students and their special needs. Other Universities suggested that such records were passed to tutors, so they did not have a record but suspected that they had admitted 'several' dyslexic students but were not able to give specific numbers.

Question 2. This question asked whether there was within the University a person with practical experience of tutoring or advising dyslexic students. Only twenty Universities replied that they did have staff with specific skills in dealing with dyslexic students. The majority indicated that they normally refer students to the University Medical Centre or to Student Counselling Services.

Question 3. On the question as to whether advice is given by the Selectors to staff who would be teaching dyslexic students, the majority of Universities indicated that this was not dealt with in a formal way. A minority of replies indicated that staff held skills in teaching dyslexic students, but most Universities would rely on the advice contained in an assessment.

Question 4. As to whether any special measures would be taken over exams, a majority of 32 Universities indicated that special concessions were available, although normally each case was treated on its own merits. Specific examples included allowing extra time at the rate of 10 minutes per hour of exam, discounting spelling errors, permitting the

use of a tape recorder or a typewriter, in some cases having an amanuensis or the use of a separate centre.

Question 5. Regarding the numbers of dyslexic students at present in the student body, a total in excess of 140 students were thought to be undertaking University courses at the present time.

Question 6. This question sought information about what action might be taken to obtain professional assessment if a student was suspected of being dyslexic. 15 Universities suggested that they would refer the student to the University Medical Officer, 4 other Universities had departments capable of carrying out assessments, and other replies indicated referring students to local neurologists, hospital departments, clinical psychologists, or local Dyslexia Associations and the Dyslexia Institute.

Discussion

The consideration of the replies received from Universities is dealt with in four sections. Firstly, the replies from the vast majority of Universities who did not have a policy towards dyslexic students is analysed. This is dealt with under the headings of:-

- a) Admission
- b) The course
- c) The examinations.

The final section takes the form of a more detailed review of the Universities with a policy towards dyslexic students.

Admission: This is the first point of contact between would-be students and the University. The majority of Universities indicated that they had, or would admit, dyslexic students providing that they were able to meet

the general entrance requirements. Only five Universities replied that they had neither admitted any dyslexic students, nor did they have any in their student body. A further ten Universities reported that they had no formal register of disabled or dyslexic students, but indicated that they would deal with such applications on an ad hoc basis. Three Universities had formed policies regarding disabled students which included dyslexic applicants, and supplied copies of these documents. Two other Universities reported being in the process of preparing a policy document. Lack of any formal record of such students or policy may simply have arisen because this information was not sought by the application forms. As one University pointed out:-

"difficulties are not noted on the entry form unless requiring permanent physical assistance".

Students often report being reluctant to declare a specific difficulty, fearing that to disclose such a difficulty might prejudice their chances of gaining admission. Other students sense (quite correctly it seems), that there is confusion within Universities about the effect of dyslexia, and whether a dyslexic student is as academically able as a student without such a difficulty. This point was expressed differently in several replies, but indicates that some Universities believed that severely dyslexic students would have difficulty in attaining entry requirements. This should be seen in context, since the vast majority of Universities were referring to the admission of conventional 18-year old students, whereas this study is largely addressed to 'mature' students over 21 years old who might be admitted on different criteria or following an interview. Only one University reported that there could be a relaxation of

general entrance requirements, certainly as far as requiring a foreign language was concerned; although there could not be a relaxation of course requirements nor acceptance without English Language. The views of many Universities are reflected in the following quotation:-

"The fact that we appear to have so few dyslexic students probably arises from the fact that dyslexia tends to be a bar to academic work even before admission to University. 'O' Level English Language is part of the general entrance requirements laid down by the Joint Matriculation Board."

The percentage of dyslexic students obtaining entry to different Universities varies considerably. In part, this is due to the way in which the records of handicapped students are maintained. The Open University quoted the highest ratio, (4.3%) of some 43 disabled students per 1,000 (although it should be remembered that this includes all categories of disability). The figure of more than 30 students per 1,000 quoted by Stirling University also referred to all handicaps known to the medical centre. The Warnock Committee on 'Special Educational Needs' suggested that some 20% of school age children will need special educational provision at some time. The incidence of specific learning difficulties is thought to lie between the 4% as quoted in the Isle of Wight Study (Rutter, Tizard & Whitmore, 1970) and the incidence of 8% which was found in the London Boroughs (Rutter & Yule, 1975); suggesting that a national average of 5% for dyslexic type difficulties would be a more realistic figure. The figures quoted by some Universities relating to the admission of specifically dyslexic students, suggests that the percentage in higher education varies from less than 1 per 1,000 up to 2.5 per 1,000.

One University reported that although their admission of dyslexic students averaged about 1 or 2 in 800 students, if the UCCA form details were taken into consideration then a much larger percentage of the student population reported having 'slight dyslexia' or 'suspected dyslexia'.

Another University suggested:-

"If one were to take appalling spelling as the only criteria, then one would say there are very large numbers, but there are only 2 or 3 truly recognised cases."

The need for a clearer definition of dyslexia is obvious from the assumption by some Universities that dyslexia was linked to impaired intellectual ability. Some replies used phrases such as "I assume your enquiry relates to under-graduates" and went on to indicate that consideration would be based on the same academic criteria as that applied to all other candidates. One Institution reported "our experience of dyslexic students is limited since so few undertake courses at 'post-graduate' level."

There is an urgent need for a clear definition of dyslexia, together with a description of the problems that such students may encounter. Requesting a professional assessment that could both quantify the extent and type of difficulty, might be a desirable first step. Without such information the University and Admissions Tutor are placed in a very difficult position.

Entry Concessions: On the question of whether an allowance should be made for a particular form of learning difficulty, there were wide disparities between the attitudes adopted by Universities and between the faculties within a particular University. One reply suggested that:-

"The attitude of faculties to dyslexic students may vary to some extent. The Faculty of Medicine admitted one such student in 1976 ... The Faculty of Education would consider dyslexia to be a disqualification for a course of initial teacher training."

This point is an interesting one, especially when compared with the response from another medical school which reported:-

"We would like to emphasise that the difficulties an aspiring medical student who is dyslexic faces are almost overwhelming."

This contrast is heightened by a further reply:-

"Obviously, being a medical school there is expertise available to help such students."

It was obvious from the replies that most Universities do not have a defined policy towards the admission of dyslexic students. Even where a policy may exist, its application may vary between faculties. Students will be expected to obtain appropriate entry qualifications for most Universities, since very few offer any concessions at the entry stage.

"The Selectors would consider the application on the same academic criteria that applied to all candidates ... special consideration would be given to the problems that have already been faced, and to those that might have to be overcome if given admission."

Even in the case of the more sympathetic Universities, as quoted above, the student has to decide whether admitting a difficulty is in his/her best interest. For most students, applying for entry at a conventional age, the best advice might be to omit the fact of a specific difficulty from the UCCA form, and discuss it with the Admissions Tutor. This would have the advantage of getting past the first hurdle of the formal application, and give the student a chance to explain the nature of the problem as it affects his/her academic work. Inclusion

of reference to it on an application form will mean the student runs the risk of outright refusal, as in the case of the University who replied that:-

"The general attitude is that no compensation should be made for a student with this disability."

If this is a University's attitude, the dyslexic student might be well advised to consider other Universities or courses as being more suitable. In any event, contacting the Admissions Tutor should enable the matter to be clarified at an early stage.

During the Course: The policy of the majority of Universities is to refer students with disabilities to the University Medical Officer. Of the Universities questioned, only fourteen informed the tutors of student difficulties, most admitting that either no advice was given, or that staff used skills they had acquired outside the University in order to tutor dyslexic students effectively.

Educational or student counselling services were reported in only eight Universities. Other Universities referred enquiries to the Student Services, or in one case to an experienced Advisor on Handicapped Students. It was encouraging to find that three Universities had procedures for informing tutors and other staff who would come into contact with the students, by providing a card or certificate issued by the University which stated the nature of the disabilities. One University described its procedures as follows:-

"We always provide a list of handicapped students, including dyslexic students, so that all those who are likely to be involved at some stage or other are aware of the problems of these particular students."

One University reply indicated a sympathetic approach, without saying what form of help was actually available:-

"Our policy with regards handicapped students is to do everything possible to ensure that they are able to pursue a degree course here, if able to demonstrate the necessary intellectual aptitude."

Regrettably, the majority of Universities do very little to help students during the course. Counselling students about suitable courses or the provision of supporting extra-mural courses in efficient learning methods, were rarely mentioned, except by the Universities who have specific policies.

Some Universities referred to their difficulty in assessing the criteria by which to judge students' needs, and referred to students "having been dyslexic" at 'O' or 'A' Level. One University which made arrangements according to student need, emphasised that "maintaining more frequent contact than would be standard", and also made the point that the student would have to experience difficulties on that particular course before special arrangements would be made.

"As these students have successfully passed (written), entrance tests, we are inclined to regard them as having overcome the worst of their problem and not to take any action in an official way until their tutors report difficulties."

The question of a professional assessment or expert advice is important, since this may be the basis upon which tutors judge what is appropriate in particular cases. Several Universities reported that the problem had not arisen, and other Universities felt that the student's difficulties should have been recognised prior to attending University and would have been discussed when seeking admission. The

need for a professional assessment providing both the student and the tutor with a clearer understanding of the student's needs is emphasised in one reply:-

"We are tolerant of spelling problems but a dyslexic student with a reading difficulty may find it not in his own interests to come here, especially as our courses are for honours only."

Six Universities reported having departments where students could be referred for professional assessment and advice. Most Universities however, suggested that they would refer students to their University Medical Officer who might then refer the student on to a variety of external bodies. These included the Local Education Authority whose Educational Psychologist had been helpful in the past, to a local hospital and possibly a Clinical Psychologist. Other Universities reported having contacts with local Dyslexia Associations and/or the national body, be it the British Dyslexia Association or the Scottish Dyslexia Association. Two Universities mentioned using an independent organisation, the Dyslexia Institute, as a source of advice and professional assessment. The majority of replies from Universities who did not have specific policies towards dyslexic students, indicated that, a 'professional' assessment would be required, but did not specify the profession that would be involved. There was a high degree of agreement that a clear and detailed assessment was desirable. One University who suggested that:-

"Assessment for dyslexia has to be carefully undertaken, and one of the reasons why some educationalists are resistant to the use of the term is that they believe it simply becomes a tag by which all those who have some sort of reading or spelling difficulty can be named."

The charge that dyslexia is a more acceptable explanation than bad spelling has been frequently levelled, and may have been warranted in some cases. The only way to ensure that a necessary provision is made, is to have a clear assessment of that individual's difficulties. This is often hard to obtain. Educational psychologists are trained to deal with school children, whereas many Clinical Psychologists lack the training necessary to place their findings in an educational context. To be successful, it would seem to be necessary to obtain a clear and objective assessment of the individual's difficulties, which must be translated into educational terms.

Exam Concessions: It is not surprising that, as reported earlier, some students are reluctant to make details of their difficulty known. Two Universities made the additional point that students were sometimes reluctant to accept help or concessions.

"Not all dyslexic students have been willing to take advantage of the help offered."

"Students have refused the offer of special provisions during examinations."

There is a natural reluctance by some students to accept concessions which they feel might put them in an advantageous position, or which they feel might single them out as being a 'special' case. This is certainly true at GCE level, where certain examination boards endorse the certificate with a statement to the effect that special concessions were made (ILEA 1981).

The majority of Universities reported making some concessions in exams; usually treating each case individually.

and on its merits:-

"At the very least, the Examiners are warned that they will not unnecessarily penalise the candidate for minor faults in spelling and grammar."

"The markers are requested to give greater weight to intellectual content rather than to form, and to make allowances for bad spelling and construction."

Concessions varied and included extra time, staggering the exam timetable so that the period was not too tiring, special aids, using a typewriter, taping examinations for subsequent transcription, scribing facilities or an amanuensis, as well as discounting spelling and grammatical errors in exams. Universities reporting allowing extra time were unanimous in allowing 10 minutes for each hour of exam; that is an allowance of 30 minutes in the normal 3 hour exam. There were examples of students having specially invigilated examinations in separate centres. This may be justified on individual need, or because of the disruption that departing students might have on the dyslexic candidate, or conversely, the effect that using a typewriter might have on the other students.

There were a minority of Universities who reported that they were not prepared to make any concessions. This related to both course work and examinations, and may have been due to an imprecise understanding of students' difficulties, or fear that the standing of the course or award might be detrimentally affected. In view of the findings reported elsewhere that spelling difficulties are likely to continue into adult life (Koppitz 1971, Yule 1973, Zangwill 1982), it was worrying to find one University stating that:-

"No spelling allowance is made, and in particular no additional time is ever given to a disabled student in any examination."

It may be that only by providing a clear report about the nature of a student's difficulties, that a University could be persuaded to consider options which might enable the student to overcome problems and express his/her true potential.

Universities with a policy towards dyslexic students:

In addition to the majority of Universities who had no clear policy towards dyslexic students, some reported having committees to deal with the needs of handicapped students. Only three Universities were able to provide policy documents relating to such students. These documents reflect the fact that the dyslexic student is considered as being a Disabled Student. A definition of a disabled student was:-

"Any student with a physical or sensory impairment or chronic sickness, which could produce educational disadvantages."

Many individuals suffer from multiple disabilities, which can present difficulties in categorisation, especially since the major disability in medical terms may not be the most important from the point of view of education or other services (Bradley & Hegarty 1981). Harris (1971) argued in favour of making a distinction between a 'disabled' and a 'handicapped' person since it is now recognised that an individual may be handicapped in one situation but not in another. The definitions suggested were that:-

"A disabled person is one who has sustained the loss or reduction of a functionable ability,

A handicapped person is one who, consequent upon a disability, is disadvantaged with the respect to his or her environment."

None of the Universities reported making such a distinction. In order to overcome the stigma of registration as 'disabled' (Dept. of Employment, 1972; Kushlik & Blunden, 1972; Tizard 1974a and 1974b), steps have been taken by some Universities to modify their admission procedure requesting information in confidence. This included supplying "Notes for Disabled Applicants", assuring students that they would not be discriminated against because of their disability. In the Open University there is a stated policy that the University accepts the responsibility to meet the educational needs of its disabled students, and in special cases can discriminate in favour of disabled applicants by guaranteeing them an offer of a place.

A critical distinction is made at this point as to whether the student is professionally diagnosed as dyslexic, or whether merely suspected of being dyslexic. There seems to be general agreement that a professional assessment is desirable, since this would provide a 'certificate' describing the individual's handicap. Such a certificate might serve as a basis for advising tutors, as well as indicating possible concessions needed to enable the student to meet the academic standards required of all students. Where such an assessment is felt necessary, this should be carried out by a suitably qualified professional, usually a psychologist. Referral can often be organised through the University Medical Officer to a local psychologist (educational or clinical) or a neurologist. The aim being to obtain an assessment of the individual's intellectual

abilities, a measure of language attainment, together with a description of the individual's difficulties and also recommendations about the student's needs; upon such a report appropriate concessions might be based.

When a dyslexic student has been assessed, the recommendation is usually circulated not only to the tutors involved with that student, but also to other departments such as the Careers Service Advisor. In the case of students whose handicap was admitted in confidence to the Medical Officer, it would be possible, with the student's approval, to discuss the matter with the Director of Studies or associate departmental staff. In cases where students did not want the matter discussed, it may only be possible to monitor their progress (informally).

Where a case of dyslexia has been established and this information has been communicated to the staff involved, there still remain two areas that should be investigated:-

- i) The involvement of the Student Counselling Service to advise on course selection, and help with students' needs during the course itself;
- ii) Involving the Careers Service at an early stage; in order to discuss both the students' long term goals, the interaction with possible employers, and most suitable profile of courses.

Under (i) there may be a need to discuss with the student the different format and demands made by individual classes, as well as the question of any prerequisite courses.

Courses with a higher practical or coursework content in the final mark may be advantageous for most dyslexic students, but there is also a need to consider these in relationship to the student's own difficulties. Some students benefit more from specific learning techniques.

such as courses in note taking or learning skills, while others would prefer to rely on mechanical aids such as tape recording lectures or typing assignments. Although it is argued that in the minds of employers a degree betokens possession of particular types of skill as well as a certain range and level of knowledge, there are cases when a degree itself would be an acceptable qualification. In other circumstances a particular profile may be required in order to enable the individual to go on to post-graduate studies or obtain entry to a professional body.

Concessions: There is general agreement that concessions should be limited to the minimum necessary to enable the student to compete on equal terms and demonstrate his or her intellectual/academic powers. Concessions during the course may be as simple as permitting lectures to be taped, a relaxation of coursework deadlines, or an increased level of report/tutorial services. Most students by the time they reach University level will already be aware of the academic areas they find easier, as well as those in which they have most difficulty. Some Universities in the U.S.A. (Cordoni, 1980a) have remedial programmes which count towards a first degree, and while this has not been recommended in any of the British responses, an argument has been put forward that remedial classes for students in the first half of their University course would be of advantage. Since many students with a history of language learning difficulties may have adopted strategies enabling them to conceal their difficulties, it is impossible to know what percentage of dyslexic students would take advantage of such remedial help were it made available. It may be more

advantageous to provide an extension of the existing classes in efficient learning techniques which could also identify strategies suitable for use by the dyslexic student at University level, without the need to return to formal remedial educational help. Such courses could discuss the relative advantages of different courses, the use of new technology and the growth in computer aids, software, the merits of typing assignments as against dictating them, or having assignments typed by a professional typist.

Universities are keenly aware that they must safeguard the external standing of degrees they award, and therefore the concessions made to candidates in examinations must be restricted to a minimum. Special procedures for examinations are normally subject to agreement with the examiners and may include:-

- granting of extra time (normally ten minutes per hour)
- use of an amanuensis
- use of tape/braille
- use of a typewriter
- provision of question papers in large print/tape/braille
- sitting of examinations at home or at special centres under strict invigilation
- the possibility of a supplementary oral examination or viva may also be considered
- the main provision should be for the board of examiners to be advised that the student suffers from dyslexia, in the hope that attention will be paid to the academic content rather than to the style of presentation.

In the case of the Open University, special learning materials are available in the form of course units and set books recorded on cassette, transcripts of radio or television programmes. Such aids may alleviate difficulties during the course, but it is recognised that they cannot alleviate the stress of examinations. The concessions recommended by Tizard (1972) included suggestions that questions might be read to the candidate, that individuals might be allowed to dictate their answers, some latitude should be given to handwriting/spelling and the use of dictionaries might be permitted. In this report they conclude that "the adoption of a common code of practice by the various examining bodies would be of particular value". In cases where stress exacerbates language difficulties to such an extent that examinations are unbearable or an unrealistic measure of ability, courses with continuous assessment should be considered.

In recent years it has been the practice of some GCE examining boards to endorse the student's certificate with a note to the effect that the student had received special concessions in the examination. This procedure was not suggested as being suitable for use at University level. One policy document did suggest that where students received concessions in their final exams, the referee should include this in his reference statement to an employer in the form of a note to the effect that the student had been diagnosed as suffering from dyslexia and had been examined under special conditions.

Dyslexia - Definition and Description

The most widely accepted definition of dyslexia used by

Universities was that formulated by the World Federation of Neurologists (1968):-

"A disorder manifest by difficulty in learning to read despite conventional instruction, adequate intelligence and social-cultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently constitutional in origin."

The main drawback to this definition is that it mentions only reading, and does not describe the person's difficulties in educational terms. The need remains for a definition suitable for use with adults. This will need to be accompanied by details of the assessment procedures and comments/advice applicable to the University tutors who may encounter the dyslexic student.

Summary

A total of 47 Universities (91%) replied to a questionnaire sent to them, regarding dyslexic students. Responses suggest that 43 dyslexic students had been admitted during that academic year. On the basis of an average course lasting three years, there may be in excess of 140 dyslexic students studying in British Universities at any one time. This total would increase considerably if self-described dyslexic students were included, or if all Open University students known to be dyslexic were included. Less than half the Universities had any 'named' person with experience to advise dyslexic students. The majority of Universities felt that it was appropriate to refer such students to the Medical Centre or Student Counselling Service. Only a minority of Universities had a policy regarding dyslexic students; the majority relying on information being passed to the individual tutor/s concerned. If a professional

assessment of a student's difficulties was required, referral to the University Medical Officer would be suggested. The majority were prepared to allow concessions in exams, with the proviso that each case would be treated on its merits. The most common concession would be extra time or discounting spelling errors.

The majority of Universities indicated that they would not be prepared to make concessions in their entry requirements for dyslexic students. There were several replies which suggested that the University feared that either the dyslexic students would have a lower level of academic ability, or would find the courses too demanding.

The analysis of replies from Universities with a policy towards dyslexic students revealed that:-

1. Evidence in the form of a professional certificate is desirable.
2. Details should be circulated to tutors and student services.
3. Tutors should investigate the student's course and support needs.
4. There is a need to identify appropriate exam concessions.

The best advice to prospective students would seem to be to select an Institution and course profile most suited to their needs and interests. If satisfying the criteria, or problems with course work and exams are envisaged, these should be discussed with the admissions tutor. Obtain a clear professional assessment justifying any special concessions. Discuss this with all tutors each year, and well in advance of exams.

There is evidence that the majority of Universities lack a consistent policy regarding the admission of dyslexic

students, and do not have an infra-structure to cater for their needs. A policy document circulated to all staff would be an advantage, especially if it provided a clearer understanding of the nature of dyslexia and how it might manifest itself in a student's work. Recommendations about sources for referral, concessions in examinations and early careers advice would be welcomed by students and staff.

It is manifestly unfair to any student who has, or imagines himself to have, a difficulty which may affect academic studies, not to give clear and consistent advice. Such a policy would be desirable to staff and students, and should be so designed to give guidance about admission, course work and examinations.

The overall conclusion of this study is similar to that of the National Innovations Centre (1973) Report. Policies and procedures are urgently needed to cover all stages of the student's academic experience, from admission to graduate vocational guidance.

CHAPTER 7

THE EFFECT OF TEACHING STRUCTURE ON LEARNING

The Effects of Teaching Structure on Learning

Following the introduction of universal education in Britian (Foster Act 1870), there was a dramatic increase in the level of literacy in the population. A secondary effect was to bring to the attention of teachers those individuals who had difficulty in learning. Up until then literacy was the prerogative of the higher social classes and the church. It was largely assumed that those who could not read and write were disadvantaged by the lack of education. Universal education brought children with a wide range of abilities to the attention of teachers for the first time (Kerr 1896).

Since Dyslexia or Specific Learning Difficulties are primarily a developmental disorder which prevents children from learning a specific skill, it is not surprising that the majority of studies dealing with dyslexia relate to children and pedagogic techniques or an analysis of failure to learn in childhood. Emphasis is slanted towards how to teach, and fewer studies deal with what the individual may learn by an experiential process. There seems to be a need to bridge the gap between what the teacher provides (pedagogic techniques), and strategies a student adopt to assimilate or demonstrate understanding. It is possible that in the future, coping techniques adopted by adults, might be taught effectively to adolescents experiencing similar learning difficulties.

The mode of presentation of material is known to effect the learning process. Two experiments were carried out as part of this study, in an effort to gain insight into the interaction between presentation format and teacher/student perception. The experiments may be seen as two sides of the same coin. The first seeks to assess the effect upon student learning of different formats used in information presentation. The second experiment attempted to assess whether the form in which a script is presented for marking, has an affect upon the marks received. Many students, not only those with perceptual handicaps believe that if material could only be provided in a more suitable format they would be able to learn more successfully. One of the claims often made in group counselling sessions is that changing from a visual to an auditory mode of presentation would be of particular assistance. There are of course particular groups of students, such as the blind and visually handicapped, who need material in this form. The increasing sales of records and tapes of 'records' or books read aloud is evidence of the preference for this mode within the general population. One area that needed to be investigated was whether the preference for material in auditory mode was realistic on the part of dyslexic students; how would their performance compare with a taped extract as compared with other modes and other users. The first experiment dealing with 'The Effect of Presentation Format on Learning Ability' is an attempt to investigate this expressed preference in an experimental form.

Students often claim that their scripts are marked on criteria other than the information they contain and quality of their answers. Claims that tidiness, general appearance,

spelling and punctuation have influenced markers have been made and investigated (Adams 1964, Chase 1967).

In the second experiment 'The Effect of Format on Tutor Marked Assignments' was tested using a single script which was presented in three forms to a number of experienced course tutors. The aim was to find out if the spelling difficulties most commonly experienced by dyslexic students, did influence tutors when marking scripts and serve to depress the final mark. Questions were also asked about the argument put forward in the script and what influence other factors had on the ease or otherwise of marking.

It was thought that the results would also serve to provide feed back to students on the desirability of typing scripts or having them 'proof read' before submission. The finding suggested that the advantages of typing or correcting a script was not as obvious as many students believe.

E X P E R I M E N T

THE EFFECT OF PRESENTATION FORMAT ON LEARNING ABILITY

Experiment - The Effect of Presentation Format on Learning

Ability

"Results indicate that the ability to utilise the material is significantly affected by the mode of presentation, and that extra time spent by such students in circumventing the obstacles contained in some presentations of material are a major factor in study patterns."

Hales, Lockwood & Hales, 1981.

The Background

Several studies dealing with groups of subjects with Specific Learning Difficulties (Cruickshank et al 1980, Calfee 1982, Burka 1983) and case histories of individuals (Clarke 1973, Rice 1973, Loftus-Brigham 1983), suggest that such students often seek alternative learning strategies. These have included using taped material, the use of 'readers', special note taking strategies, speed reading, using braille and taking maximum advantage of orally presented information in the form of lectures and tutorials (McCoy 1975, Bryant 1965, Warncke & Callaway 1973). Conventional text books dealing with reading difficulties often advocate techniques which by disregarding the 'specific' nature of the difficulties these students are experiencing, mean that the recommendations are inappropriate. Such students are not disadvantaged by virtue of inexperience as often implied, rather they are experiencing specific difficulty in learning efficiently. Courses and texts on 'efficient learning strategies' have been found to be particularly useful with such students. These provide a range of suggestions from which any student may choose and elaborate on techniques which suit his/her learning pattern. The difficulties reported by the present student population suggest that many would have benefitted from such a study before embarking on their chosen courses.

The Open University courses have to be essentially based upon printed material, in the form of the course units, supplementary material and the set books. These are augmented by radio and television broadcasts, tutorials, and course work which may be either Tutor Marked Assignments - TMA's - (essay type) or Computer Marked Assignments - CMA's - (multiple choice questions) or both. In a study of self-declared dyslexic students in the Open University (Hales 1982), the performance of 20 students was monitored during one academic year (February to September). These reports were compared with some 26 returns submitted by the Tutors of those students. The results were weighted to correct for differences due to inconsistencies which in part were due to the fact that students represented every faculty except Science and made different numbers of returns. A third of all students claimed that Course Units and Set Books were harder to read than their usual range of reading. In a pilot study (Gauntlett 1978) it was recorded that several dyslexic Open University students had requested that taped material should be made more available. In the exploratory study into the presentation of distance teaching course material' (Hales, Lockwood & Hales 1981), the major problems reported concerned the original course material and alternative mode of course material, the latter being criticised for being unreliable or in the wrong format. In the simulation experiment (Hales, Lockwood & Hales 1981), the two most frequent problems were investigated, namely the conventional printed material and alternative modes. Two alternative modes of presentation were used for each of three types of handicap:-

Partially sighted students - normal and large print;
partially hearing students - normal and annotated;
and blind students - braille and cassettes.

Each subject received two extracts from an Open University Course together with activities and questions. The results are based upon a rather small number of people (N. = 8) with only two subjects in the partially sighted 'cell'. The conclusions were that:

"The manner in which the course material is presented has a significant effect upon the understanding and subsequent performance of the students involved."

Since the mode of presentation also affects the efficiency with which the student uses it, the report concludes that more investigation is needed to ensure the right mode is selected for a given situation, but also that students may need advice and training on the use of the alternative mode.

Experimental Design

The above studies suggested that there is a need to test the claim that dyslexic students would benefit from alternative modes of presentation. The most readily available alternative modes, and those requiring less training (as compared with braille), were annotated material and tape recorded units. An experimental design was therefore developed which would involve these alternative modes, and a 'normal' presentation. Four groups of subjects were chosen, so that experience of using a particular format such as taped material in the case of the visually handicapped students, could be controlled for. These would be drawn from the lists of disabled students kept within the Open University, and excluded students who had previously studied

the course from which the material was drawn. The four groups consisted of equal numbers (10 in each cell) of:-

Dyslexic Students

Visually Handicapped Students

Hearing Impaired Students

Control Group (Normal Students)

Table 5.

Presentation Experiment

Subjects \ Modality	Normal Open University Text	Annotated	With Tape
Control	X		
Dyslexic	X	X	X
Hearing Impaired		X	
Visually Handi- capped			X

N. = 10 in each cell

For the purposes of statistical analysis the scores in this table equate with:-

1. = Hearing impaired students - receiving annotated material.
2. = Dyslexic students - receiving annotated material.
3. = Visually handicapped students - receiving tape and material.
4. = Dyslexic students - receiving tape and material.
5. = Control group - receiving conventional material.
6. = Dyslexic group - receiving conventional material.

(The terms 'material' and 'conventional material' are interchangeable since they both relate to a section of the standard printed Open University Course - see appendix.)

The Course Extract

The extract used met the following criteria, it was:-

1. Typical of the teaching material produced by the faculty in terms of its general style, use of illustrations, extracts and student activities, etc.
2. It was unfamiliar to students - students who had taken that course were excluded.
3. The extract was self-contained and did not rely upon previously taught material.
4. It was sufficiently long and detailed to form a realistic learning task.

The extract focused upon Maternal Deprivation and extended to approximately 2,000 words. It was considered to be of moderate difficulty, and included a long quote, three activities and a graph; it was assessed by twelve questions.

The extract was then presented in three forms:-

- A. Normal size print followed by the twelve questions in larger print.
- B. An annotated form, with diagrams encompassing the main concepts on alternate pages, followed by the twelve large print questions.
- C. Normal size print and large print questions, accompanied by a compact cassette tape-recording of the material.

Presentation to Students

Students of the Open University are accustomed to receiving distance learning material through the post. The experimental material was assembled in a package which would be both self-explanatory and self-contained. Within the main envelope was an introductory letter seeking the student's co-operation, and a second envelope with instructions attached to the outside. The student was asked to undertake the exercise when they might have some 20 minutes uninterrupted time. Inside the envelope they would find:-

- A. The printed material, and tape if appropriate.
- B. They were asked to note the time started and finished.
- C. The questions.
- D. A stamped/addressed return envelope.

Upon completion, the student was requested to seal the material in the envelope provided and return as soon as possible .

The Students

The Disabled Students Area Office within the Open University collates information about any students with particular difficulties. These range from mild to severe, and may be temporary or permanent. Since all students' records are computerised and maintained on microfiche it is possible to obtain details of all students within a particular group. The safeguard within the Open University requires that a research proposal such as this be approved before approaching individual students. This safeguard is intended to prevent individuals being approached by more than one researcher at a time, and preventing unreasonable demands which might interfere with their studies.

Despite the service provided by the system and safeguards built into it, the central record system was only able to provide approximate details of approximately one-third of the dyslexic students within the University. To ensure complete coverage, all Regional Offices were contacted and asked for a list of dyslexic students known to them. In most cases there was considerable overlap, although almost half the regions provided names of students not on the National List, and in one case this search resulted in four new subjects, none of whom appeared on the central list.

The remainder of subjects were known to the author as a result of the Pilot study or individual contact during the course of earlier research. Since the experimental design necessitated a minimum of 30 valid replies from dyslexic students, a list of some 71 dyslexic students was eventually compiled. The other groups were obtained from 'central' records controlled for on the basis of disability, availability and geographical distribution. Students in any group were excluded if they had taken the course from which the material was drawn, and in the few cases when subjects reported having read the material in other circumstances, these subjects were also excluded. The other difficulty encountered in this study, as with most postal surveys, was the low level of returns. This was tackled in two ways:-

- A. More students were approached than were necessary for the study.
- B. A personal letter was sent to each student explaining the reason for seeking their co-operation, and stressing the fact that this was the final piece of research work in the current investigation.

The Results

The data was collected from the returns of ten different subjects in each of the six conditions. From these returns it was possible to calculate the length of time spent studying the material, since each subject recorded the time they started and finished. Subjects also completed a set of questions which aimed to test their knowledge of the

material studied. These questions were marked and they provided a measurement of the amount learnt in terms of correct answers. The results are set out in Tables (6) and (7) in terms of mean scores and standard deviation within each condition.

Table 6

Table Indicating Time Taken

Material	Subjects	Mean Time Taken (in minutes)	Standard Deviation
Annotated	1 Hearing Impaired	30.4	10.41
" "	2 Dyslexic	30.3	11.72
Taped	3 Visually Handicapped	46.9	19.16
"	4 Dyslexic	46.6	36.40
Normal	5 Control	15.8	5.88
"	6 Dyslexic	25.5	9.69

Table 7

Table Indicating Scores obtained as Correct Answers

Material	Subjects	Mean Score	Standard Deviation
Annotated	1 Hearing Impaired	24.3	3.68
" "	2 Dyslexic	16.8	5.24
Taped	3 Visually Handicapped	23.1	6.57
"	4 Dyslexic	19.6	5.77
Normal	5 Control	21.9	5.48
"	6 Dyslexic	14.4	3.86

Descriptive Analysis

SPEED: In terms of speed (time taken) the dyslexic subjects performed at levels very similar to handicapped students using the same material. The Control group, using 'normal' printed material were significantly faster than any other group (P < .01)^{see Table 9.}. Dyslexic subjects using 'normal' material were found to be faster than groups using modified material. The time taken by dyslexic subjects increased between each condition:-

Normal mode	25.5 minutes
Annotated mode	30.3 minutes
Taped mode	46.6 minutes

There were no significant differences between the dyslexic and handicapped students working with annotated or taped material. Students disabled by factors such as visual or auditory problems might have been expected to have acquired patterns of 'learnt' behaviour which would have allowed them to use alternative formats more efficiently than the inexperienced dyslexic students. This is not supported by the mean scores, which suggest that students whose language abilities are impaired by specific difficulties are similarly affected by being provided with modified material.

Table 8 shows that the Control group were significantly faster than all other groups. The dyslexic group reading 'normal' material were faster than all but the Control group. The visually handicapped group, using a taped version were significantly slower than all other groups except, the dyslexic students using taped material which may be due to the use of fixed speed tape recorders.

Table 8

Levels of Significance Between Time Taken - 'T' Values

Annotated	1						
Annotated	2	.02					
		x	x				
Taped	3	2.39	2.33				
Taped	4	1.35	1.34	.023			
		xx	xx	xx	xx		
Control	5	3.85	3.49	4.86	4.64		
'Normal'	6	1.08	.99	3.15	5.88	2.70	
		1	2	3	4	5	6

x = P < .05
xx = P < .01

ACCURACY

An attempt to measure the subjects learning under each condition was made by using a set of questions seeking information contained within the passage. These answers were then marked and mean scores calculated for each condition (Table 7). There were fewer significant differences between the scores achieved on the questions. Although there were slight differences between the modes of presentation, the differences between the control, visually handicapped and hearing impaired groups were not significantly different. The dyslexic subjects showed evidence of increasing scores in relation to the time taken:

Normal mode	14.4
Annotated mode	16.8
Taped mode	19.6

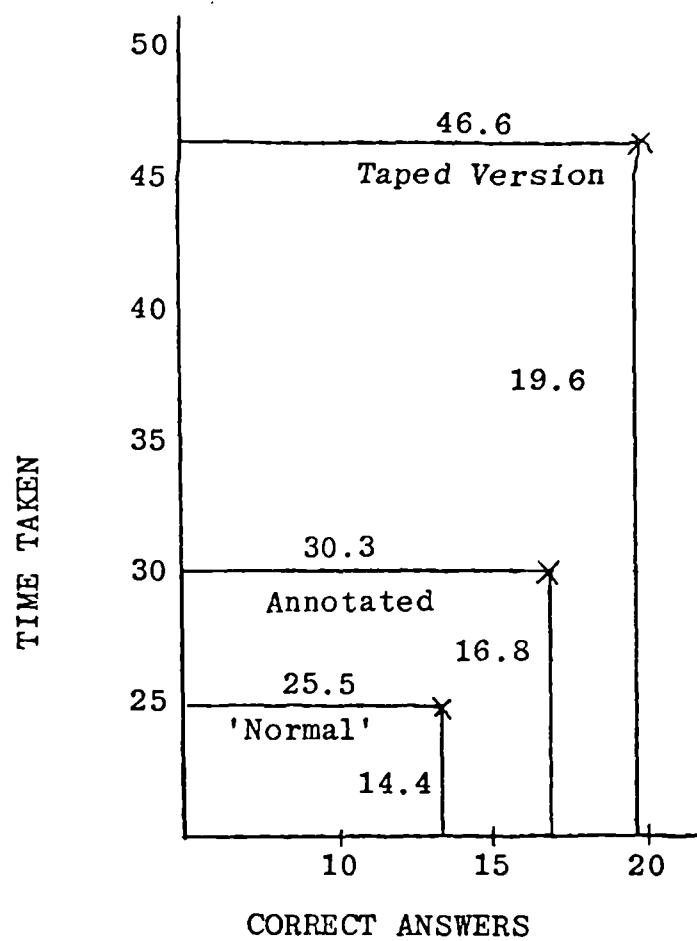
The dyslexic group using 'normal' printed material was the lowest scoring group, whose scores were significantly below dyslexic subjects in the other two conditions ($p < .01$) and lower than the Control group using identical material ($p < .01$). The hearing impaired group using annotated material achieved a significantly higher score than the dyslexic group using the same material ($p < .01$).

A Comparison of Answer Scores - 'T' Values

Table 10 (Spearman's Rank Correlation)
Correlation Between Time & Correct Answers in Each
Condition

The pattern of scores achieved by the dyslexic students reveals that they achieved more correct answers when they spent longer studying the extract. The data from dyslexic subjects is set out in a simplified form in the following diagram:-

Figure 6



Analysis of Variance and Correlation Analysis

The fact that there are significant difference between measures has already been demonstrated, but these measures have been based on mean scores, Kerlinger (1973), suggests that measures of the magnitude of the relation should also be carried out.

ANOVA

An analysis was carried out using Bartlett's Test (Glass and Stanley 1970) in the computer programme by Clarke (1981).

The following results were achieved:-

<u>Table 11</u>	<u>Df</u>	<u>F ratio</u>	<u>Probability</u>	
The times of all subjects compared with scores	$\frac{1}{119}$	23.89	P	.01
Time of dyslexic subjects compared with other subjects	$\frac{1}{59}$	.322	P	.5
Score of dyslexic subjects compared with other subjects	$\frac{1}{59}$	20.31	P	.01
Comparison between times for all groups	$\frac{1}{59}$	4.31	P	.01
Comparison between scores for all groups	$\frac{5}{59}$	5.41	P	.01

These results reinforce the earlier findings that the mean scores of the dyslexic are similar to the other groups using similar material, but there are significant differences between the number of correct answers given.

Correlation

The Spearmans Rank Correlation formula was used to calculate the correlation between relationships under different conditions. There was only one significant correlation between the times taken under each condition, this was

between dyslexic subjects using annotated material and dyslexic subjects using conventional material. There were no significant correlations between the scores achieved by any of the groups under the different conditions.

Table 10 shows the correlation between the times and scores in each condition.

Although the diagrammatic presentation of scores suggests a significant correlation between time and accuracy, this was not found using the Spearmans correlation. The r value was $-.07$, and may be accounted for because of a large standard deviation between the time taken, and because there were only ten subjects in each condition.

Speed and Accuracy

The relationship between time taken to complete this work and the score achieved revealed an interesting pattern. The students using taped material spent considerably longer working on the unit, but in the case of the dyslexic group they also achieved their highest marks. The annotated material was used most efficiently by the hearing impaired group, who achieved the highest answer scores and took on average 12 minutes less than the students using tape. The dyslexic students using annotated material took 13 minutes less than when using tapes, but their marks went down by three points.

With conventional material, both the control group and the dyslexic group were faster than dyslexic students in other conditions or the visually handicapped and hearing impaired groups. Although dyslexic students using conventional material were faster than the dyslexic group using taped

or annotated material, both the dyslexic and control groups using conventional material achieved lower scores on the marked questions. Reading for speed has been found to be negatively correlated with a reading comprehension (Harris & Sipay 1977); these results support that finding since there is a negative relationship between time spent on assignments and the amount remembered. (Support for this view is found in the total scores given in terms of the mean time taken and mean scores achieved on the questions. In the case of the dyslexic students, those conditions where they spent more time (using annotated or taped material) resulted in significantly higher scores on the questions.

The Hearing Impaired students achieved the highest answer scores (using annotated material) but were faster than the Visually Handicapped who used tape. This may be due to the visual structure of diagrams which aid memory. Support for this is evidenced by the fact that two subjects used the diagrams presented with the text when answering the questions; this did not happen in any other condition or group. Alternatively, the discrepancy may be because students using taped material would need to be trained in its use, and provided with variable speed tape decks if they are to overcome the constraints imposed by the medium. This point was made forcefully by some dyslexic students, who were not sure whether they should listen to the tapes and follow the printed text at the same time, nor were they as skilled at stopping the tape and making notes.

Summary

The aim of this study was to determine whether the format in which material is presented affects learning. Subjects who had Specific Learning Difficulties or dyslexia were

compared with both a control group and with other groups with Specific difficulties and learning experiences; three forms of format were used. The same passage from an Open University text was presented in a 'normal' form, with annotated diagrams or accompanied by a taped version. In each condition the dyslexic students were contrasted with another group accustomed to working with that type of material, and with other dyslexic students using material in a different modality.

All participants were students of the Open University who were contacted by post, with identical sets of instructions. The analysis of their responses suggests that students working with 'conventional' printed material were faster than students using 'annotated' material, who were in turn faster than students using a taped material. The only significant correlation between time and the scores on answers, was in the case of the dyslexic students who took longer with taped material but achieved their highest scores.

An earlier study by Hales (1981) suggested that the mode of presentation had a "significant effect upon the understanding and subsequent performance of the students involved".

Partially-sighted students had been faster working with large print than with normal, and Blind students were faster with a cassette than with Braille. This same pattern was evident in the test scores. Students using annotated material were found to take longer than with normal material, but the majority achieved similar test scores.

Similar results were achieved in the current study, despite the increase in the numbers of subjects in each condition compared with Hales (1981). Those students (visually handi-

capped and dyslexic) using normal material plus a cassette, took considerably longer but achieved higher test scores. The annotated material used by the Hearing Impaired and Dyslexic students took longer to read and resulted in higher test scores than did the groups receiving 'normal' material. This latter group, with conventionally presented material were faster than in any other condition, but achieved lower scores.

The statistical analysis indicates that the dyslexic students were slower than the comparative group in all conditions. They also achieved lower scores on the questions about the passage. The fact that the performance of the dyslexic groups varied in a similar way to the comparative groups indicates that they were both affected by the different modes of presentation. A comparison of the dyslexic group's scores reveals that they took longer to 'read' the different types of material, from 'normal' to 'annotated' and 'taped'. Although their scores remained below the comparison and 'control' groups, the scores of dyslexic students increased in inverse proportion to time taken, i.e. higher scores when spending longer reading - 'normal' to 'annotated' to 'taped'. The conclusions are that the modality in which material is presented affects learning, that higher test scores will be achieved by those who spend longer studying the passage, and that memory is most efficient where the material was presented in more than one modality. Unfortunately, the dyslexic students were found to experience greater difficulties in learning than did other groups, regardless of modality.

EXPERIMENT

THE EFFECT OF FORMAT ON TUTOR MARKING

Introduction

An important feature of any distance teaching system is monitoring the student's understanding and progress, usually by some form of continuous assessment. Within most Open University courses this is done by regular Tutor Marked Assignments (or essays). These are normally submitted at 6 weekly intervals throughout the course, and together with the Computer Marked Assignments, form 50% of the final course mark. The other 50% consists of the mark the individual achieves in the written examination. The overall effect is that although the Open University under-graduate courses are very similar in academic standards to conventional University courses, there is a slight advantage for some students in placing a higher emphasis on course work. This requires a student to present several pieces of written work during an academic year. Since students submit their assignments by post, and tutorials may not be as frequent as in a conventional University, many students have fears that factors other than the content of their essays may affect the mark. In an effort to overcome the effects of poor spelling or weak handwriting, several students have reported typing their own assignments or having them typed for them. This was confirmed when a group of students were questioned at the University College of North Wales in Bangor; of the 9 students questioned, 2 reported that they typed their own essays, 2 more reported having help from their spouse, and a further 2 claimed to receive help from their peers or from professionals in having scripts re-typed.

Support for the advantages of typing is found in Fernald (1943) and in the literature relating to personal experience

of language learning difficulties. In Clarke (1973) the student Mike reported: "I'd say the typewriter was the device that helped me most, it helped by giving you a concrete letter. I think they should teach all dyslexic kids with typewriters." Arguments in favour of typing have been advanced suggesting that typing ensures that the written work proceeds consistently from left to right, reduces the incidents of individual letters being reversed in direction, and provides a concrete aid in the form of the visually recognised keys, (van Bijn 1976, Gauntlett 1978, Cordoni 1982).

"The typewriter appears to be of particular value as an instructional vehicle, particularly for those students who lack the alphabetic identification skills."

(Gold 1971).

The concept of typing scripts is an academic application of the suggestion contained in the Kershaw report (1974) which suggested that many dyslexics would be able to express themselves better in a vocational setting if they were allowed the use of a typewriter. Cruickshank (1980) includes an electric typewriter in the suggested kit which should enable adolescents to meet an educational challenge. Johnson & Myklebust (1967) suggest the use of a typewriter since its use will often help children with re-visualisation deficits, and 'typing' also reinforces the visual images since the letters are seen on the keys and on the page. Campbell (1973) hypothesised that typewriting would reduce 'proprioceptive errors and interference' and thereby improve academic performance. Reference to the remedial advantages of using a typewriter are to be found in the works of Gillingham & Stillman (1975), Duffy (1977), Davis (1971), Jordan (1972) and Valett (1980). Several examination boards

at both C.S.E. and G.C.E. levels will permit the use of typewriters, and appear in the review of concessions compiled by the Dyslexia Institute (1977) and Rabinowitz & Mileham (1980). The fact that many Universities will also permit the use of typewriters in examinations is covered elsewhere in this thesis. In a survey conducted by Hales (1982) of Dyslexic Students throughout an academic year, he found:

"Most students appeared to find maximum difficulty early in the course ... the incidence of typing was highest in February (early in the Open University year, February - November), diminishing to a fairly steady low figure (approximately 6.7%) during the rest of the year."

Whether it is worthwhile employing a typist to type and correct the spelling mistakes in a handwritten script does not seem to have been investigated.

Review of the Literature

Educational interests in idiosyncratic marking of essays dates from the latter parts of the last century. The fact that marks assigned to essays reflect factors which are extraneous to the purpose of the essays, was noted in early studies by Edgeworth (1880 and 1890). In another paper before the Royal Statistical Society in 1890, Hamilton R. quotes the instructions to H.M.'s Inspectors (1887, Sec.25):

"A pass should not be withheld if the writing is fair, and the errors in spelling do not exceed three."

Starch & Elliott (1912, 1913a and 1913b) carried out several studies on the reliability of grading written work. In 1927 H. James and later E. Shepherd (1929) undertook the study on "The Effect of Quality of Penmanship on Grades". In Britain, Hartog & Rhodes (1936) studied the marks given by examiners

and provided further support for the fact that marks awarded to essays often reflect factors extraneous to the purpose of the exam (Adams 1964, Klein & Hart 1968, Stalnaker 1951). Factors such as spelling, grammar, composition, punctuation, examiner fatigue, and sex or attractiveness of author have all been examined. These factors have all been reported as relating significantly to the grades assigned to essays (Chase 1967, Scannell & Marshall 1966, Marshall 1967, Briggs 1970 and 1971). A factor often reported by subjects in this study suggests that difficulties increased with stress or tiredness. Support for this view is also found in Coffman & Kurfman (1968) who found a tendency to achieve lower grades on the second day or when the subject was fatigued. Two other factors which have varied between studies have been the nature and number of examiners. These have varied from 700 History teachers marking 13 forms of the essay in the case of Marshall (1967); college students who graded the experiment carried out by Scannell & Marshall (1966); and 25 teachers mostly teaching English in Secondary Schools who were asked to mark the 5 essays in the experiments of Briggs (1980). Studies on the influence of handwriting have concluded that there is a significant difference between the marks awarded for the same essay when presented in different forms of handwriting. Thus Briggs (1971) suggests that a student with bad handwriting is perhaps much more vulnerable if he writes average or rather poor essays, than if he writes good essays. Wade (1978) suggests another implication, namely that the poor student with a good presentation style, may be over-achieving in terms of the marks awarded. This suggests that the student can be

helped or hindered by virtue of the style of presentation. Thorndyke & Hagen (1969) in their text book on measurement concluded that:-

"If a student knows nothing, or very little, in a subject area but has a high degree of skill in written expression, he can clothe his ideas in words that make a favourable impression on some readers (that is bluff) and get a higher mark even though he knows little or nothing. On the other hand a student who knows the same amount but is poor in written expression is likely to get a failing mark."

A review of the literature revealed that only three studies have involved using a typewritten format. The influential study of Scannel & Marshall (1966) involved using an essay which was an 'A' grade essay; they then modified it to form a 'B' grade essay, and then used this in either a 'perfect' form or with errors in grammar, punctuation or spelling. All 5 forms of this essay were typed, and presented in a typewritten format for marking by college students. The instructions were to grade for content only, but it was found that spelling errors had a greater negative influence on the teachers' grades than did errors of grammar or punctuation. The conclusion of this study and the subsequent study by Marshall (1967), both concluded that the copies with errors received significantly lower grades. Marshall's conclusion (1967) was that errors in punctuation had the least negative influence on the teachers' grades, because they are least noticeable, and that spelling errors have a greater influence because they are more noticeable. In a subsequent study, Marshall & Powers (1969) attempted to study the effects of written neatness, composition errors and spelling mistakes. 12 forms of an essay were prepared, and although the essay itself was identical in

content, it differed in terms of written neatness from poor, to fair or neat; it could be presented in a typed form and containing either no errors or 18 spelling errors or 18 grammar errors. These different forms of the essay were presented to 420 prospective teachers who were instructed to mark the essay upon the content of the answer only. An analysis of the results indicated that:-

- a) an essay containing either 18 spelling or 18 grammar errors will be assigned significantly lower grades than the same response containing no errors;
- b) a good handwritten response will be assigned significantly higher grades than a fair handwritten response;
- c) of particular interest was the lack of significant difference between the mean grades assigned to poor handwritten and typewritten forms, and the mean grades assigned to other written forms;
- d) there was no significant interaction between composition errors and written neatness.

The differences between composition forms (i.e. the spelling and grammar errors) were consistent with earlier studies, but it is interesting to note the relative effect of the various writing forms. The highest mean grades were assigned to the neat, easy to read, handwritten essay. In rank order, the poor handwritten essay and the typewritten essays came next, with the fair handwritten essay being last. The relative positions in the hierarchy of the latter three forms are surprising, in that it might have been expected that a good typewritten paper would serve to the advantage of the examinee and a poor handwritten paper would serve to his disadvantage. The only statistically significant difference was between the neat handwritten essay and the fair handwritten form, where probability was

less than .05. The mean for both the spelling and the grammar forms were also significantly lower than the means for the no error forms. Earlier studies involving essays on the topic "Was the Civil War Avoidable?" have been criticised by Soloff (1973) because although the topic was an historical one, it was also an opinion question. In the current study 420 prospective teachers enrolled in under-graduate history and educational psychology classes in the University of Missouri, St. Louis, were the examiners. These factors leant weight to Soloff's other points that the examiners were in fact prospective teachers instead of real ones; the point she wished to make being that they were not well equipped to judge a high school essay without appropriate teaching experience.

The final study involving an essay in typewritten form, is to be found in the experiment conducted by Bull & Stevens (1979) where the aim was to study the effect of penmanship and the physical attractiveness of the writer. This was done by preparing an essay which was always exactly the same in content. However, it varied in that the picture that was supplied purporting to be that of the author, was either male or female, attractive or unattractive, while the essay itself had three experimental conditions; being typed, or written in good or poor handwriting. Bull & Stevens argued that since personal interviewers are aware of the sex and physical attractiveness of job applicants, and by the design of this experiment, they expected to find support for earlier findings that physical attractiveness and the sex of the applicant has a significant effect on the assessor (Salvia et al 1975, Dipboye 1975, Schuler & Berger 1977). The markers were asked to rate the essay using four

dimensions (i.e. style, ideas, creativeness and general quality) and they were also asked to rate the writer for intelligence, sensitivity, talent and general ability. The data was collated into two tables according to the supposed sex of the author, and the mean scores were derived for each condition. For the male authors no significant main effects or inter-actions were found for any of the judgments. Penmanship had a significant effect when it was thought to originate from an author who was female, with both the 'style' and 'general ability' being significantly different at the 0.01 level ^(Kendall's Coefficient of Concordance), with both attractive and unattractive authors receiving lower marks for an essay with poor handwriting rather than when it was typed or presented in good handwriting. Significant interactions at the $P < 0.05$ level, were found in relation to 'intelligence', 'talent' and 'general quality'. These factors proved significant in the conditions where the female author was unattractive and the typewritten form of the essay received the highest marks, but where the female author was attractive, the typewritten form received the lowest marks. The writers were unable to explain this, and concluded that earlier findings (Dion, 1972) of "what is beautiful is good" were not found to be the case in this experiment, nor was it possible to assess the effects of handwriting or typewritten scripts independently from factors related to the author's sex and attractiveness.

Experimental Design

This experiment was designed to assess whether a typewritten script received higher marks than scripts which were poorly handwritten or compared with scripts which, although typed, included spelling mistakes. In several case studies reference

had been made to the fact that higher marks were obtained by the student when a script was typed and corrected either by a spouse or professional typist. It was therefore decided to replicate this situation by obtaining a handwritten essay or Tutor Marked Assignment (T.M.A.) which had been submitted by an Open University student as part of a current course; and to present this to markers in three different conditions:-

- a) original handwritten essay;
- b) the same essay but typed with as far as possible the same mistakes and style of presentation;
- c) a typewritten form of the original essay with only spelling mistakes corrected and punctuation added.

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These three forms of the essay were then sent to¹⁵ Open University tutors who had experience of marking essays related to this particular course. The tutors were told that this was "part of a continuous programme of research into the problems surrounding handicapped students", and they were asked to mark the essay in the normal way, and when they had graded it, to return it in a stamped addressed envelope provided. The essay was accompanied by photocopies of the Supplementary Material relevant to the course units, and a copy of the Tutor notes which are the guidelines sent to all tutors advising on marking scripts. The difference between this essay and others that might be submitted by students direct to their tutor, was that the tutor was requested to complete an amended T.M.A. form. This requested the following information:-

- 1. The overall grade/score.
- 2. Tutor's comments and advice to student.

3. Did the student seem to have difficulty with:
 - a) expressing ideas;
 - b) spelling;
 - c) comprehension of what the question required;
 - d) syntax;
 - e) structure of answer.
4. Did you have any particular difficulty in marking this script?
5. If yes - what was the difficulty due to?

(This document - DG/WJB/SRD/10/9/81 - can be found in the appendix).

The experiment thus consisted of an essay which has been chosen from several submitted by a genuine dyslexic student as part of his on-going course work during a previous year. This was presented in three conditions: the original form, a typed version with no corrections, and a typed version with spelling corrections only. Grades and comments were then obtained by getting each form marked independently by five tutors.

Results

It had been expected from student's reports, and evidence available from the literature, that the handwritten form which included 'spelling mistakes would receive the lowest marks, and that the typewritten form which was correctly spelt would receive the highest marks. In fact, the ^{'T' test} results obtained were not statistically significant. Although there was a slight advantage in favour of the 'original typed' version (13), this did not differ significantly from either the typed and corrected version (10) or the original version 'handwritten' (12). This may be due in part to the fact that the numbers of tutors marking each form were comparatively small, 5 in each condition, but it is also thought to reflect

the uniform standard of marking that has been developed within the Open University. This has been developed through the use of guidelines to tutors as well as to examiners on the important factors within any essay, and feedback about how their marks compare with the marks awarded by other tutors. The results may also reflect the fact that the tutors have undertaken a commitment involving both teaching and marking course work, so that they have experience in setting aside periods of time when they can mark student scripts, without having to do this while under external pressures of time or circumstance.

The Overall Grades/Scores

The Open University custom of recording the grade awarded to the Tutor Marked Assignment (T.M.A.) at the top of the Tutor's comments, provided a straightforward source for comparison. Normally the marks awarded are indicated by letters, for the purpose of this exercise these were converted to numerical equivalents as follows: A = 5; B = 4; C = 3; D = 2; F = 1. From these a table of scores was prepared.

TABLE (12) , Format of the Script Marked

	Original Handwritten	Original Typed	Typed and Corrected
Scores Awarded	3	2	2
	3	2	3
	2	3	1
	2	4	2
	2	2	2
Total	12	13	10
Mean	2.4	2.6	2.0
SD	0.54	0.89	0.70

From the table it can be seen that the typed version with the spelling errors corrected, in fact achieved the lowest overall score. There was not any meaningful difference between the two forms that included spelling errors, whether handwritten or typed. This suggests that higher marks are not obtained merely by typing a script, and that students might be well advised only to type scripts when it is of value to them, as in cases of dysgraphia, typing experience or where the typewriter is an aid in expression.

Tutors' Comments and Advice to Students

The tutors' comments and advice to students are seen as an elaboration of the mark awarded. The majority made comments about the student's expression of ideas, other tutors commented on the student's spelling, and precise understanding of specific points within the course unit. The most critical comment accompanied the script that had been typed and had the spelling corrected, where a tutor reported that:-

"I risk giving you a 'D' but have to tell you that to earn a degree you must achieve, whatever your problems, a greater clarity of expression."

Another tutor marked a typed script which had not had the spelling corrected and reported that:-

"I have given this assignment a 'C' although I think that the spelling mistakes and grammatical ambiguities could have been sufficient to cause grade drop to 'D'."

A tutor marking the original handwritten script comments that:-

"You would certainly have gained a 'C', however, had you been able to express yourself with greater accuracy and precision."

Questions about the Marker's View on the Script

This set of questions were designed to provide data that might indicate which factors influenced the tutors undertaking the marking. Five questions were asked, relating to the difficulty the student had in expressing ideas, spelling, comprehension of question, syntax or structure of the answers. Tutors were asked to tick a YES or NO box as appropriate. Since the essay was the same in each condition, and only the style of presentation varied, it had been expected that the only difference would relate to the aspects that had changed, i.e. spelling and syntax. Tutors' replies suggest that they detected differences in the student's comprehension and essay structure.

The Questions

The question was asked:- "Did you detect that the student had difficulty with:", and then five categories were listed.

- | | | |
|---------------|----|---|
| Ideas | a) | Most tutors reported that the student had difficulties in expressing ideas in writing. Since this was a 'middle of the road' essay, this seems to have been a reasonable comment and viewed uniformly. |
| Spelling | b) | All but one tutor felt the students had difficulty with spelling. This was unexpected since in the 'corrected' format every effort had been taken to ensure all errors had been omitted. |
| Comprehension | c) | The student's comprehension of the material covered was consistently assessed in all three conditions. This was the expected result and suggested that views of the student's understanding is not influenced by the way answers are presented. |
| Syntax | d) | Difficulties associated with syntax were seen as being less obvious in the case of typed but uncorrected versions. The total number of tutors feeling that there had been some difficulty was similar to other factors. |

e) Only on the question related to the structure of the students' answers were there noticeable differences between the three conditions. Only one tutor criticised the structure of the original form of the essay. Two tutors criticised the typed form, but when the spelling errors were corrected, four out of the five tutors felt that the structure was poor. Since the essay remained the same in all conditions, this result suggests that the focus of the marker's attention changes. A marker freed from problems in deciphering handwriting or spelling errors may then concentrate attention on other aspects.

Structure

TABLE (13)

Presentation Format

(Number of markers reporting difficulties)

Student Difficulties	Original Handwritten	Typed But Not Corrected	Typed And Spelling Corrected	Totals
a) Ideas	3	4	4	11
b) Spelling	5	5	4	14
c) Comprehension	3	3	3	9
d) Syntax	4	2	4	10
e) Structure	1	2	4	7
	Ex 16 \bar{m} 3.2 SD 1.48	Ex 16 \bar{m} 3.2 SD 1.30	Ex 19 \bar{m} 3.8 SD 0.44	\bar{m} 10.2
Tutors having difficulty marking scripts	5	5	4	14

A further indication as to the effect that presentation format has on marking can be obtained by totalling the number of critical comments for each format. There was no difference between handwritten and typed forms, but the typed form where the spelling errors had been corrected incurred more critical comment and at a uniformly high level. It is difficult to explain this since spelling errors had been corrected, and

no other alterations had been made. It may be that tutors adopt a subjective approach to marking an individual essay, so that a middle grade essay will receive comments on the main areas, and a higher grade essay might receive comments on more superficial areas. It may be that particular difficulties are more easily recognised in some formats than in others. If this is the case, then it may explain why the adverse comments made of the typed and corrected format resulted in this format receiving the lowest grades. Among the total number of difficulties attributed to the different categories, there remains an unexpected finding which it seems hard to account for: that is, that despite correction, the difficulties attributed to spelling mistakes did not fall as expected, but difficulties attributed to the essay's structure rose as the style of presentation became clearer. The questions addressed to the tutors were originally designed to ascertain whether the marker was aware of presentation differences when marking, and sought to find if there was a correlation with essay grade/scores. The results suggest further research is necessary to distinguish between factors associated with presentation format, the grammatical and factual content, of scripts, and the contrast with the overall mark awarded. This research experiment reinforces the view that earlier experiments may have concentrated on wider issues, without adequately resolving the question of what influence form has on content.

The Cause of the Marking Difficulty

Since in all cases it was the same essay, the fact that all except one tutor reported having difficulty in marking the script, suggests that they were in fact referring to factors other than the presentation format. Some indication of the

types of difficulty experienced by markers can be found in the answers to the question about the difficulties experienced. The question was open-ended and the answers both subjective and difficult to categorise. There was a wider range of answers than contained in the section asking for advice to the student. The results are best grouped in relation to the format in which the script was presented.

Copies of the original handwritten script elicited the following replies:-

"Even if one can make sufficient sense of the intended meaning, and that meaning is intellectually reasonable, can a student with this level of verbal disability be awarded a degree?"

"If this were actually being returned, I should have corrected grammar/spelling errors to one/two pages and explained this in my notes. Script practically illegible in parts so that I became increasingly aware of the state of my own handwriting as I proceeded!"

"The combination of bad writing and bad spelling sometimes makes for real difficulties."

"The chief problems were handwriting and spelling - deciphering them made it very difficult to concentrate on the ideas being expressed."

"If this script had been typed and correctly spelt it would have been much easier to work on in a positive way."

"I was conscious of 'blind spots' in spelling, syntax and comprehension, poor legibility and odd spelling."

The original script when typed, but still including the original spelling mistakes and other errors elicited the following comments:-

"Expression of ideas can be inhibited by the spelling of a single word - syntax generally good - but inadequate punctuation."

"There is a good deal that is incomprehensible as written communication, this might even be a Grade 'A' essay if it were spoken. Perhaps the

Open University should allow dyslexic students to tape record their T.M.A.'s (Tutor Marked Assignments" and examination answers."

"There seems to be a pattern of spelling idiosyncrasies even where words were spelt in several ways."

The script that had been typed and had had the spelling errors corrected resulted in the following comments:-

"This is full of insight and good ideas, but it is expressed in a way unacceptable among people seriously interested in ideas."

"My view is that it makes no sense to award a degree to someone who cannot systematically and clearly express their perceptions in their chosen field."

"Someone with this disability ought not to be admitted to a degree course."

"The difficulty was not due to dyslexia, but to the vague generalisations used by the student."

"I feel that as a Tutor-Counsellor I need to have some knowledge of dyslexia and the obstacles it presents. On the other hand, marking this T.M.A. in isolation and bearing in mind that this piece of work is part of a University degree, I could not ignore the disorganised expression of ideas, tendency to generalise, the disjointed style, the failure to answer the question in real detail, the reliance on the unit material and the lack of coherence overall."

Comments by tutors suggest that there is a continuing need to provide Tutors-Counsellors with additional information about the individual student, especially when the student suffers from a specific difficulty which may affect learning or expressive ability.

Summary

This experiment varies from those previously reported in the literature, in that it attempted to verify whether the commonly held view that typewritten scripts obtain higher marks is true in the case of a script written by a dyslexic student. The script was presented in three forms, handwritten

and either typed, or typed and with the spelling mistakes corrected. No significant differences were found between the marks awarded in the three conditions. As in earlier studies (Marshall & Powers 1969, Bull & Stevens 1979), there was no significant difference between the grades assigned to the three different forms of this essay. Nor was there a significant correlation between the grade awarded, the style in which the essay was presented, or the number of tutors who reported the student as having spelling difficulties. This result does not support the findings of Scannell & Marshall (1966) who found a significant difference when the forms contained spelling errors or a combination of errors. Tutors indicated that the student seemed to have more difficulty with the structure of the essay when it was typed and the spelling corrected. This suggests that when the essay is presented in a style that frees the tutor from other distractions, there is a tendency to concentrate on the remaining salient features. The fact that there were no significant differences between cells may have been influenced by the size of the samples. The conclusion from this experiment must be that although typing an essay may have advantages for the student, concerned, having it typed and the spelling errors eliminated does not increase the marks awarded, but serves to change the focus of the tutor's comments. The typed and corrected scripts achieved a lower mean grade score, and attracted more adverse comments than did either the handwritten or typed format with spelling errors. A negative correlation found between correcting and typing, in respect of both grade awarded and comments, only remained below the level of significance (.05) because of the low numbers in each cell. This reinforces the overall conclusion that a typewritten format does not enhance the mark awarded.

CHAPTER 8

A STUDY OF ADULT DYSLEXIA STUDENTS -

BY QUESTIONNAIRE AND PSYCHOMETRIC ASSESSMENT

A STUDY OF ADULT DYSLEXIC STUDENTS - BY QUESTIONNAIRE
AND PSYCHOMETRIC ASSESSMENT

"Specific language disability has run the gamut of labels. No matter what we call it, this is a specific problem. It affects any area of language (speech, reading, spelling and/or writing) and sets the person with normal hearing and vision and average intelligence apart from his peers in dealing with our language. Although there is a tendency to sugar-coat the word 'disability' and call it an 'inability', the effect is that these people are disabled as surely as if they had lost any of their faculties."

McClelland (1973).

There are many similarities between the first hand accounts by dyslexic adults (Westwood 1977, Simpson 1979, Gauntlett 1981, Hampshire 1981) and case studies reported in the literature (Clarke 1973, Bright 1970, Miles 1974, Spache 1981). Frequent reference is also made to famous and infamous people who are reported to have been dyslexic (Thompson 1969a, 1969b, Critchley 1970, Occupational Psychologist 1973, Rawson 1977, Hampshire 1981, Geschwind 1982). Articles in the popular press often mention well-known figures (listed below) to illustrate both how widespread the difficulty is, and to suggest that it is possible to be successful despite the handicap. What has been lacking is a comparative assessment of dyslexia in adult life, together with its effect on the individual's personal development and vocational choice. Generalizing from specific cases is clearly a flawed methodology, so for this study it was decided to obtain details from adults in tertiary education using a structured questionnaire. This sought to obtain data using a standard set of questions, supported by formal assessment using standardised psycho-

metric instruments. This chapter deals with data obtained by a Questionnaire, the Wechsler Adult Intelligence Scale and measures of language attainment in terms of reading and spelling.

Well-known people who it is claimed have suffered from dyslexia include:- Susan Hampshire, Sarah Miles, Angharad Rees, Duncan Goodhew, Peter Scott, Beryl Reid, Sir Winston Churchill, Greville Wynne, The Earl of Yarmouth, Lord Ted Willis and a Cabinet Minister in Britain. Abroad, examples include Hans Christian Anderson, Leonardo da Vinci, King Karl XI of Sweden, Caesar, Napoleon, Einstein, Nelson Rockefeller, Lee Harvey Oswald and General George Patten. (Stoke Evening Sentinel 1979, Daily Mirror 1980, Bucks Free Press 1981, Burnley Evening Star 1982, Sunday Mercury 1982, Mother 1982.)

The Questionnaire

In the pilot study (Gauntlett 1979b) a simplified questionnaire was developed and sent to those Open University students who had replied to an open letter. This sought information about the number and needs of dyslexic students in the University. The original questionnaire was simplistic in design, and by necessity, limited, since it was to be sent by post to those people who professed a written language difficulty. This questionnaire was subsequently modified to seek more information about the individual's background, current educational experiences and strategies. It was also desirable to decide the way in which the questionnaire would be used (Oppenheim 1966). Since the aim was to collect personal data during a structured interview (Bynner (1981), a standardised sequence of

questions were to be used, including both open ended and pre-coded questions. As the interviewer would be the same in all cases, and the questionnaire and interview would precede psychometric tests, it was also necessary to ensure that the initial part of the interview explained both the purpose and preceedures to be followed. A sample of the proposed questions were then administered experimentally to a group of students based at the University College of North Wales (Gauntlett 1980).

The results from the pilot testing of questions were then used in developing both open ended and closed questions (Moser & Kalton 1971), to be used as the structured interview at the start of the assessment process (Oppenheim 1981).

The questionnaire was to elicit personal details, information about development, experience and clinical information.

This structured interview had to both provide the subject with information as well as electing answers, This proved to be a valuable instrument, enabling the interviewer to develop a rapport with subjects and reduce the threatening nature of the subsequent psychometric assessment. All questions were orally administered.

The questionnaire covered seven main areas:-

1. Clinical information - background and development.
2. School experience and academic attainment.
3. Occupation and vocational factors.
4. Self-esteem - the influence of difficulties.
5. Social factors - reasons for returning to tertiary education.
6. Methods of coping.
7. Attitudes of 'significant' others.

Through out this section the total number of subjects are 30, with ten subjects from each of the following groups: Further Education, Higher Education and the Open University. The mean age for all subjects being 32.16 years.

Statistical Analysis

Correlations of the original questions, 58 were selected as being suitable for converting to numerical data for computer analysis. The analysis undertaken involved the Principle Components of Association, measured as Lambda Coefficients, using the statistical package for the social sciences (SPSS). ^{For} Each factor there was a correlation calculated in comparison with every other factor, providing 58 x 58 correlation co-efficients (3364). These were then examined to ascertain their critical value with 30df (degrees of freedom). The level of significance based on a one tailed test has been used in the text when discussing the answers to individual questions. Possible explanations for the low number of significant correlations may include constraints imposed by:-

- a) only 30 subjects;
- b) ten subjects from each of three groups;
- c) that the questions sought descriptive data and were not formulated to investigate a hypothesis of cause and effect;
- d) the only thing these adult subjects had in common was a specific language learning difficulty and present involvement in education.

Lambda Co-efficients: The degree of correlation, and an indication of its level of significance, have been included in the text together with descriptive statistics as appropriate.

Analysis of Answers

1. The Clinical Aspects. The majority of the questions included within the 'clinical' category sought background details about the subject's family, early development, laterality and school life. An influence in the development of the questionnaire was the Bangor Dyslexia Test. This was initially developed at the University College of North Wales by Prof. T.R. Miles and has recently become commercially available (Miles 1983a, 1983b) and includes many of the 'signs' listed by Miles (1974).

a) Distribution by Sex. The most commonly quoted figure suggests that boys experiencing dyslexia outnumber girls 4 to 1. In the present study there are 21 males to 9 female subjects, equivalent to 2.3 to 1. In all groups there were more male than female subjects; only in one group, those from Higher Education, was the ratio as high as might have been expected, with 8 male to 2 female subjects (4 to 1). There were no significant differences between groups, nor did this correlate significantly with any other factor, although a relationship was noted between socio-economic factors and the sex distribution. In Higher Education, where the highest ratio of males was found, the father's socio-economic position was found to be higher than in other groups. This may in part be related to an often reported pattern indicating that boys from higher socio-economic families are more likely to continue into tertiary education.

b) If Assessed Before. Subjects were asked if they had ever been assessed before with regard to their language learning difficulties. Eight subjects (26.6%) had been assessed before, and of these, six had been described as

being dyslexic and two as 'word-blind'. The two subjects described as 'word-blind' were Open University students with ages above the mean (32 years) for all groups. This reflects the less frequent use of the term 'word-blind', which has given way to Dyslexia or Specific Learning Difficulties.

c) Late Development. Originally there were three questions within this category: 'Were there any difficulties surrounding your birth? Were you late learning to walk, and Were you late learning to talk?'. The low number of positive responses led to these questions being compressed into a single category. Replies indicate that 10 out of 30 subjects (33.3%) experienced some developmental difference, mainly with speech development. Six out of the ten Further Education students (60%) had experienced problems; but for all groups this was neither a significant factor, nor did it correlate with any other factor.

d) Age When Reading. Under the general heading of childhood difficulties, subjects were asked whether they were late, or had difficulty, learning to read. Lateness was described as being seven years or older before reading. Twenty-two subjects (73.3%) reported difficulty.

TABLE 14

Further Education	10	100%
Higher Education	5	50%
Open University	7	70%

Although this factor seems to be indicative of subsequent language learning difficulties (de Hirsch et al 1966), the difference between groups needs explanation. The only sig-

nificant correlation (.33 $P < .05$) was between this question and the number of subjects having reported returning to education for personal reasons. There was no correlation with age or socio-economic status. It may be that those subjects who continued into Higher Education were less handicapped linguistically if measured on reading ability (only 4 had below average reading scores as adults), or that they had benefitted from their parents' slightly higher socio-economic status. In either case, their academic careers had progressed in a more 'conventional' fashion. It was noted that the Higher Education subjects were more intelligent than those in Further Education. Among factors affecting schooling, there was another possible explanation, that is that the Higher Education subjects were found to be significantly older than other groups when detected as having a problem. This seems to support the view that their problems were not as severe, and were not a cause of concern until later in their educational life.

e) Illness or Accident. In answer to the question as to whether there had been any major illness or accident during childhood, which might have caused the difficulty, only two subjects (6.6%) reported any illnesses that due to a high temperature might have been a contributory factor.

f) Family History. The question as to whether there was a family history of written language difficulty has often been debated in the literature, with Hermann (1959) and others claiming strong familial incidence. In this study the 24 positive responses (80%) were evenly distributed through all three groups and showed no correlation with the subject's sex.

g) Laterality. All subjects were tested to ascertain their 1) Dominant eye; 2) Reference eye; 3) Dominant/preferred ear; 4) Handedness; 5) Foot preference. These results were then grouped as follows:-

TABLE 15

Consistently dexteral	14	(46.6%)
Consistently sinistral	4	(13.3%)
Mixed Dominance	4	(13.3%)
Cross Lateral (opposite hand/eye)	8	(26.6%)

These findings do not support suggestions that dyslexic subjects are 'left-handed', but it does indicate that the majority were not consistently 'right-handed'.

h) Difficulty with Months. Subjects were asked to repeat the months of the year, both forward and backward. In each group only 2 subjects (6.6%) experienced any difficulty. The most common pattern being hesitation when working backward from December.

i) Difficulty in Pronouncing Polysyllabic Words. A total of 11 subjects (36.6%) had difficulty pronouncing two or more from the list of six words orally presented. There was no significant correlation with other factors.

j) Right/left Confusion. The problem of confusing left from right has been referred to frequently by writers such as Critchley (1970) who has suggested several strategies used as memory aids. In this study only 7 subjects (23.2%) reported any difficulty, or experienced difficulty with tasks such as pointing to the author's right hand with their left hand.

2. School Experience. Several questions can be grouped together since they all relate to factors associated with the subject's school experience.

a) Years at School. Since many subjects had attended school for varying lengths of time, it was decided to ask the age at which they started school, and the age at which they left. From this was calculated the number of years attending school. The mean time at school was:-

TABLE 16

	\bar{x}	S.D.
Further Education	11.3 years	1.25 years
Higher Education	11.5 years	1.42 years
Open University	11.2 years	1.75 years
Summary - mean of 11.4 years attending school.		

The fact that there was no significant difference between the populations is interesting, since the higher mean age of the Open University group might have been expected to reflect the fact that they could have left school when aged 14 or 15 years old. The only suggestion of this is reflected by the higher standard deviation among their scores, and includes three subjects who spent only 9 years in school. However, other factors may have affected their education; these included the Second World War, evacuation, and slightly higher socio-economic background, which in one case led to a severely handicapped individual having a full-time private tutor. There was a significant correlation with school exams taken (.34 $P < .05$).

b) Number of Schools Attended. A factor which has been shown to be influential in young children is frequent changes of school. This is sometimes found with itinerant workers or the children of Forces personnel. The mean numbers of schools attended were:-

TABLE 17

	\bar{x}	S.D.
Further Education	3.8	1.03
Higher Education	3.7	3.0
Open University	2.4	0.9
Summary - no significant differences in number of schools attended.		

The interesting point here is that there were fewer changes of school among the older subjects (and a lower standard deviation). Again, this is thought to have been a reflection of the educational system prevailing at that time.

c) 11-Plus or Common Entrance Exam. A criteria by which many pupils have been judged is whether they were able to pass scholastic examinations between Junior and Secondary Schools. For the pupils in the state sector, this would have been the '11-plus', for those in independent school 'Common Entrance' may have been appropriate. The numbers of students taking and passing these exams were lower than had been expected. Of Further Education subjects, nine out of ten sat the exam, but only one passed. The Open University subjects were less successful with no passes from three attempts, and the Further Education subjects only recorded two attempts and no passes.

d) Age Realised. If remedial help is to be provided early in a child's education in the hope of preventing secondary problems, early identification is often advocated. Identification may depend upon the degree of difficulty the individual experiences, their intellectual 'potential', and the educational climate of opinion. The mean ages when the subjects first realised that they had a problem (subjective) were:-

TABLE 18

	\bar{x}	S.D.
Further Education	8.2 years	2.09 years
Higher Education	10.0 years	3.65 years
Open University	8.7 years	3.77 years
Summary - mean age when problem was recognised was 9 years old.		

The mean age for identification throughout all groups was 9.0 years. The Open University subjects had the widest age range, from 5 to 18 years.

e) Effect of Realisation. The effect of realising that they had a difficulty was scaled from 1 to 5. Low scores indicating that there was little if any change, higher scores indicating increased awareness and worry.

TABLE 19

	\bar{x}	S.D.
Further Education	4.3	0.82
Higher Education	3.5	0.70
Open University	3.8	1.13
Summary - realisation increased both awareness and anxiety.		

All groups showed an increase in anxiety following realisation that they had a difficulty. Several subjects who had not been assessed, reported feelings of inadequacy, and there were two subjects who were educated as E.S.N. (educationally sub-normal).

f) Parental Attitudes. Subjects were asked about their parents' attitudes to their learning difficulties. These were also scaled from 1 to 5, low scores indicating support, high scores rejection and disapproval.

TABLE 20

	\bar{x}	S.D.
Further Education	3.0	1.41
Higher Education	2.9	0.73
Open University	2.7	0.82
Summary - parental attitudes were not noticeably different.		

These scores suggest that parental attitudes were not a major factor. The higher scores recorded by those in Further Education (two subjects scored 5 indicating strong parental disapproval), may be related to their higher anxiety scores when they recognised they had a difficulty.

g) Comparison with Others. Subjects were asked how they felt their abilities compared with others of the same age at school. No age was specified. The replies were scaled 1 to 5 with low scores indicating a favourable (good) comparison, and a high score being weak or unfavourable comparison.

TABLE 21

	\bar{x}	S.D.
Further Education	4.0	0.60
Higher Education	3.1	0.56
Open University	3.8	0.63

Summary - majority felt less able than their peers.

These scores suggest that most subjects believed themselves to be slightly below their peers in ability. This pattern is consistent across all groups, despite above average levels of intellectual ability in the Higher and Open University groups. This factor correlated with parental attitudes (.28) suggesting that parental attitudes are often based upon the child's attainment in basic subjects. When a child has difficulty with a basic skill such as reading, this reflected by parental attitudes, the child's perception of self, and in comparison with peers.

h) School Reports. All subjects were asked to rank their school reports on a scale of 1 to 5. One being good, and 5 weak or downright bad.

TABLE 22

	\bar{x}	S.D.
Further Education	3.9	0.7
Higher Education	3.5	0.7
Open University	3.6	0.51

Summary - school reports tended to be poor/critical.

These scores are comparatively uniform and suggest that the majority of subjects had below average/poor school reports. The discrepancy between these reports and the subject's

intellectual potential seems to have been due to language learning difficulties. There are high levels of correlation (.42 $P < .01$) between the reports and the number of years the subject spent at school, and also the age when the language difficulty was realised. Educational attainment has often been quoted as a major factor related to socio-economic position. In the present study, the school reports were found to correlate positively ($P < .05$) with the subject's present position on the Registrar General's socio-economic scale.

1) School Leaving Exams. In the final question, this section concerned attainment at school; subjects were asked whether they took and passed any exams before leaving school. Since the age range of subjects was wide, they embraced exams such as Matriculation, the School Leaving Certificate, G.C.E. and C.S.E.

TABLE 23

Further Education	4	Number of subjects taking/passing exams before leaving school was less than 50%.
Higher Education;	5	
Open University	5	

Less than 50% of the subjects passed any form of exam before leaving school, despite an above average level of intellect. Since only a minority of subjects had been recognised as having a specific learning difficulty, the majority were either not entered for exams, or entered without the advantage of support and concessions appropriate to their needs. The results to this question (exams passed) correlated significantly ($P < .05$) with:-

- a) the number of years spent at school (.34);
- b) the way written language influenced vocational choice (.35);
- c) the fact that a minority read for entertainment (.44).

The fact that 'length of time attending school' correlates with 'exam success' might have been predicted. These results give support to observations that exam success influences vocational choice, and that this is also related to whether a person reads for entertainment.

3. Vocational Factors. Many questions about the subject's first or subsequent jobs and comparison with their father's job and related socio-economic position have been covered elsewhere. Other questions were asked to ascertain what factors influenced the subject's vocational choice, both short term (job) and long term (career).

a) The Reason for Choosing First Job. Having sought details of the subject's first jobs, they were then asked why they chose that job. Four categories were used, and the answers scored against the appropriate criteria:-

1. Available;
2. Local;
3. Did not involve written language;
4. As part of career.

The reasons for choosing a particular job were more restricted than had been expected. All subjects reported choosing on the grounds of availability or because the job did not involve written language.

TABLE 24

	Available	No Language
Further Education	6	4
Higher Education	4	6
Open University	1	9
	<hr/>	<hr/>
	11(37%)	19(63%)

Summary - 63% chose their job because it did not involve written language.

The subject's choice also correlated highly with the outcome of earlier assessments (.66 $P < .01$). This suggests that the

majority of subjects (by approximately 2 to 1) chose a particular job because they felt it involved only a low level of written language skill.

b) Has your Work involved You in any Courses? Since most subjects report difficulty at school and choosing jobs with lower demands in terms of written language skills, this question was included in the hope of finding out whether their present socio-economic position related to 'in-service' type courses. The replies revealed an unexpected pattern:

TABLE 25

Further Education	9 answered yes
Higher Education	8 answered yes
Open University	10 answered yes

These figures suggest that 90% of subjects had been, or are taking courses directly related to their work. A comparison in terms of academic content was not possible since they ranged from practically assessed craft courses to those of a chartered accountant. The vast majority reported that the work-related nature of the course, and the ability to place the new information in context, aided their learning.

c) Course Success. Subjects were asked whether the course they had taken was examined, and if so, what was the outcome:

TABLE 26

	Took Courses	Examined	Passed	Failed
Further Education	9	7	4	3
Higher Education	8 *	6	4	2
Open University	10**	6	3	3
* 2 continuing				
** 4 continuing				
Summary - 64% passed				

These figures indicate that one-fifth of the subjects were taking courses which were work-related, and had yet to be examined. Of those who have sat exams there was a 64% pass rate. Given the wide range of courses involved, this does not indicate any significant difference in the pass rate from that which might have been achieved by chance alone.

d) Did written language difficulties influence your choice of jobs? If so, how? These two questions were included to assess the extent to which their written language difficulties were a factor in choosing jobs. The extent to which written language was a factor was assessed on a 5 point scale, ranging from 1 = severely, to 5 = very little.

TABLE 27

	Language an influence? Yes	To What Extent?		
		Severely	Quite Severely	Noticeable Effect
Further Education	10	5	4	1
Higher Education	8	5	1	2
Open University	10	4	3	1

Summary - 93% report that language influenced their choice of job - 78% to a severe degree.

All but two subjects reported that written language skills affected their choice of jobs. The majority of these, 50%, complained that they had been severely affected, another 28% suggested that their decision had been quite severely affected, 14% recorded themselves as being noticeably affected, whilst only 2 subjects suggested the effect was mild or very little. The overall effect would seem to be that subjects who have experienced a specific learning difficulty allow this to be a major factor in their job choice. The influence of these difficulties was found to

correlate with a preference for live entertainment (.35
P<.05).

e) Did written language difficulties influence your career choice? The emphasis of this question was in finding out whether the subject's difficulties influenced long as well as short term vocational choice. In 28 out of 30 cases, (93%), subjects reported that this had been an important factor in their choice of a long term career. Replies included examples of subjects who had wanted to follow the family tradition as a Medical Doctor but had been forced to accept the less demanding position of a Nurse, and two examples of subjects working in Science because their written language skills prevented them from following language-orientated vocations. The number of subjects involved in Business who would like to be writers or journalists is illustrated in the discussion of vocational patterns.

f) How did your language difficulties influence your long term career?

TABLE 28

Restricted career choice	15
Need to avoid reading and writing	12
Difficulty getting promotion, need for education	6

Language difficulties were identified as having a major effect on career choice. Poor communicative ability, the need to hide difficulty, affected 'avenue' to career, loss of identity, being asked to leave University, all were reported at least once. The most frequent response indicated that career choice had been restricted to areas involving limited reading.

g) Does your present job involve much reading?

Although subjects reported avoiding jobs which demanded high levels of written language skills, this question was felt necessary, to check whether, with promotion, they continued to avoid such responsibility. Gottfredson et al (1983) found that dyslexic type subjects were attracted into posts which allowed them to utilise inter-personnel skills rather than written language abilities. The way in which the individual approached and interacted with the responsibilities of a particular post are important - for example, holding a managerial post will not always involve the same amount of written work, even for two people in similar posts within the same Company. The results correlated significantly ($.33 P < .05$) with the fact that the majority of subjects reported returning to education for personal reasons.

TABLE 29

Further Education	-	No subject had a job involving reading.
Higher Education	-	Only 2 subjects had jobs involving reading.
Open University	-	3 subjects held jobs involving reading.

Summary - only 16% had job involving regular reading.

Although having a job involving reading does not correlate with the increasing socio-economic status of subjects, this may have been because the correlation was calculated on the basis of individual scores rather than between groups. The higher socio-economic position of the Open University subjects is only an indication that with promotion there may be an increase in the reading requirement. There remains the fact that 84% of subjects held jobs that did not involve regular reading.

h) Do you read for entertainment? Many case studies have suggested that either because of difficulty, or because it was an inappropriate mode, few dyslexic subjects read for entertainment. 73% of subjects had described themselves as being late in learning to read, so this question was intended to find out whether this 'late' start was overcome or mitigated in later life. Only 26% reported reading for entertainment.

TABLE 30

Further Education	-	2 subjects read for entertainment
Higher Education	-	3 subjects read for entertainment
Open University	-	6 subjects read for entertainment
Summary - 74% do NOT read for entertainment.		

The fact that there was an increase in the number of cases seems related to the increase in age and intellect distributed in the three groups. The reports of reading for entertainment also correlated positively with the subject's school leaving exam results (.44 P .01) and the subject's job categorised by interest (.30 P .05).

i) Do you prefer live entertainment? This question was elaborated upon where necessary by contrasting reading poetry and prose, with attending live performances or listening to spoken word tapes. In terms of the modality used, this question was thought to be the reverse of the previous question concerning reading for entertainment.

TABLE 31

Further Education	-	All subjects preferred live entertainment.
Higher Education	-	8 subjects preferred live entertainment.
Open University	-	8 subjects preferred live entertainment.
Summary - 86% prefer 'live' entertainment.		

Scores suggest that although only approximately 36% of subjects read for entertainment, 86% would prefer a live performance. Extraneous factors such as a sense of occasion when attending a public performance or the deterrant of living a long way from the nearest cultural centre have not been investigated. These may in part account for the overlap, where a few subjects reported reading for entertainment, but preferring a live performance.

4. Self Image. In this section the subject was asked questions about their perception of themselves, and about how others perceived them. Some studies have suggested that dyslexic subjects may be slow in developing social skills, and that because of language difficulties, they may fail to appreciate subtle inferences. The majority of studies indicate that one of the effects of a specific learning difficulty is a feeling of inferiority leading to lack of self-esteem. (See section on Personality).

a) How did you feel about yourself after leaving school? This question was asked in an effort to find out if the individual's view of themselves had been influenced negatively during their school education. It was scored on a 5 point scale, with 1 presenting a positive attitude, and 5 representing a very poor view of their own abilities.

TABLE 32

	\bar{x}	S.D.
Further Education	4.2	0.6
Higher Education	3.7	1.0
Open University	3.9	1.4
Summary - subjects had below average and negative views of own abilities on leaving school.		

FIGURE 7

	Further Education	Higher Education	Open University
1			x
2		x x	x
3	x	-x- -x-	-x-
4	-xxxxx-	-x-x-	x x
5	x x $\bar{x} = 4.2$	x x x $\bar{x} = 3.7$	x x x x $\bar{x} = 3.9$

-----)
 mean)
 score) One
 -----) Standard
) Deviation

The interesting point is that most subjects left with a view of themselves as being of below average ability. Of the four with better than average feelings about themselves, it should be noted that the only subject reporting a positive attitude was also the only subject to have attained socio-economic Class I. The view a subject held of his/her own abilities when leaving school, correlated with only two other factors. The first (.57 $P < .01$) was with the result of a positive assessment earlier in life, and secondly, (.31 $P < .05$) with whether the subject would be going to seek remedial help in the future.

b) What influence did your difficulty have on you?

Again, this was scored on a 5 point scale, with 1 representing a great deal of influence, and 5 indicating very little influence.

TABLE 33

	\bar{x}	S.D.
Further Education	4.2	0.90
Higher Education	3.7	0.84
Open University	4.1	0.73
Summary - low self-esteem does not seem to have caused a secondary effect.		

FIGURE 8

	Further Education	Higher Education	Open University
1 -	$\bar{x} = 4.2$	$\bar{x} = 3.7$	$\bar{x} = 4.1$
2 -	x		
3 -		x x	x x
4 -	x xx x x	x x	x x xxx
5 -	x x x x	x x x xxx	x xx

-----) One
 mean) Standard
 score) Deviation

This result suggests that although the majority reported feeling inferior to their peers, this had comparatively little influence upon them. Their scores on this question did correlate positively ($P < .05$) with their comparison of their abilities with those of others, and when their difficulties were first realised at school.

c) What was the attitude of 'significant others' when you decided to return to education? Some first hand reports (Simpson 1980) have referred to the attitudes of parents or spouses in influencing the individual's decision to seek remedial help or re-enter education. The subject's responses were scored on a 5 point scale, 1 indicating a positive supporting attitude, and 5 being antagonistic to the idea.

TABLE 34

	\bar{x}	S, D,
Further Education	2.6	1.26
Higher Education	2.9	1.59
Open University	2.2	0.78
Summary - subjects reported mainly positive support in returning to education.		

FIGURE 9

	Further Education	Higher Education	Open University
1	x x	x x	x x
2	-----x-x-x-----	-----x-xx-----	x x x x
3	x x x	x x	x x x x
4	x		
5	x	x xx	
	$\bar{x} = 2.6$	$\bar{x} = 2.9$	$\bar{x} = 2.2$

-----) One
 $\frac{\text{mean}}{\text{score}}$) Standard
 -----) Deviation

The graphic representation is used here since it highlights the wide range of attitudes encountered by the first two groups. The 3 cases reported by Higher Education students of outright hostility to the idea that they should return to full-time education, may give some insight into why so few dyslexic students are found in Higher Education.

d) What image of yourself do you have now you are back in education? On the five point scale, the lower scores indicated a more positive attitude.

TABLE 35

	\bar{x}	S.D.
Further Education	3.2	0.78
Higher Education	3.4	1.42
Open University	2.7	0.67
Summary - subjects reported higher self-esteem than when they left school.		

FIGURE 10

	Further Education	Higher Education	Open University
1	$\bar{x} = 3.2$	$\bar{x} = 3.4$	$\bar{x} = 2.7$
2	x x	x x	xx x x
3	x x x x	x x	-x-x-x-xx-
4	x x x x	x x	x
5		x xx	

-----) One
 $\frac{\text{mean}}{\text{score}}$) Standard
 -----) Deviation

The mean scores indicate a slight improvement in self-image compared with the level when they left school (4a) although the Higher Education group did not show the same degree of improvement as secured in other groups. The Higher Education group also showed an increase in their Standard Deviation of scores, which is reflected in the graphic representation.

e) How might your personality be described by others?

Many subjects in the piloting of the questionnaire had chosen terms closely related to, or directly using, the terms introvert and extrovert. Accordingly, these factors were used to categorise the subject's view as how others might describe him/her.

TABLE 36

	Extrovert	Introvert
Further Education	9	1
Higher Education	7	3
Open University	6	4
	<hr/>	<hr/>
	73%	27%

Summary - more than two thirds felt they might be described as extroverts.

f) How would you describe your own personality?

These answers were also classified as Introvert or Extrovert.

TABLE 37

	Extrovert	Introvert
Further Education	6	4
Higher Education	7	3
Open University	7	3
	<hr/>	<hr/>
	67%	33%

Summary - the majority felt that other people's views of them were right and they were extroverts.

These replies indicate that 3 Further Education students feel that they are more introvert than their friends might suggest. The Higher Education students felt that the way they were viewed by others was accurate in all cases, and

only one Open University student felt there was any difference, in that case feeling that others viewed him as more introvert than he actually felt. Answers to the questions as to how others might describe the subject's personality and self-view of personality, were found to correlate positively at the $P < .05$ level (.55).

5. Social Factors. A written language difficulty is often described as being a personal, pervasive and secret difficulty. Although 'specific' since it relates only to written language problems, and is not due to lack of intelligence, the difficulty often leads to feelings of inadequacy which have far-reaching social consequences. Many adults prefer to avoid social situations where they might be placed in a position involving reading or writing and so have their difficulties publically recognised. There are cases where the individual has even been reluctant to admit their difficulties to their spouse. The questions within this section were an attempt to find out about social factors in the subjects' lives and how their language difficulties have influenced them.

a) What are your social/leisure interests? Since all the subjects were mature, and might be expected to be leading full social lives, the question was open ended and the main interests were recorded. In view of the fact that the results were obtained from 30 adults who had chosen to return to education, the fact that the most frequently reported interest was studying should come as no surprise. What was unexpected was that only eight subjects reported this as a major leisure interest, despite the heavy com-

mittment required of Open University students in particular.

TABLE 38

Studying	X X X X X X X X	(8)
Art	X X X X X X X	(7)
Family & Friends	X X X X X X X	(7)
Rambling	X X X X X	(5)
Sport	X X X X	(4)
Social Groups	X X X	(3)
Faith / T.M.	X X X	(3)
Gardening	X X X	(3)
D.I.Y.	X X X	(3)
Football	X X	(2)
Photography	X X	(2)
Swimming, Politics, Archaelology, Travel, Cookery Music, Clog-dancing, Reading and Rock & Roll scored (1)		

b) Has your written language difficulty prevented you from accepting any posts? Some adults have regretfully recorded that due to their difficulties they have avoided serving on committees and accepting posts as Secretary or 'Club Officer'. The problem of taking, or reading, minutes in public, or writing team fixtures and reports has excluded many even when very interested in the activity itself. The answers to this question were more negative than originally expected.

TABLE 39

Further Education - All reported being prevented.
Higher Education - 9 out of 10 were prevented.
Open University - 7 out of 10 were prevented.
Summary - a Total of 87% reported being prevented.

The fact that 87% reported that because of their written language difficulties they had been prevented from playing a full role in social institutions of their choice, suggests that the feelings of inadequacy do not recede after leaving school. The problem is often deliberately concealed, if not by a deliberate strategy, then by avoiding situations

where it might be detected.

c) Do you avoid reading aloud? Examples of when this might be necessary were a Lesson in a Church Service, or reading the Minutes at a meeting. All but two (94%) reported that they actively avoided reading aloud. Two cases recorded that one of their regrets was never having been able to read aloud to their own children.

d) Has your difficulty prevented you from doing particular things? This question was designed to find out whether participation in activities such as drama, music, languages or poetry had been prevented.

TABLE 40

Further Education	- All reported being prevented.
Higher Education	- 8 out of 10 were prevented.
Open University	- 7 out of 10 were prevented.
Summary	- a total of 83% reported being prevented.

These figures are nearly identical with the replies to the question as to whether written language difficulties prevented subjects undertaking specific posts. Despite the similarity, the co-relation is not significant, since different subjects reported being deterred from initial participation, compared with those who could not accept a particular post. The answers did correlate significantly with earlier assessment outcome (.33 $P < .05$).

e) Does your written language performance vary considerably over time? When the questionnaire was developed, several subjects were noted as reporting considerable fluctuation in their ability to read and write. 'Good and bad days' was the most common description, with reports of severe difficulties preventing any form of reading or

writing on some mornings, although there was no apparent reason. 'Considerably' was described as the failure to do a routine task that they might have expected to do reasonably easily, i.e. write a cheque, write their own name and address, or read their normal daily paper. (Stine et al 1975).

TABLE 41

Further Education	- 9 subjects reported variation
Higher Education	- 9 subjects reported variation
Open University	- 10 subjects reported variation
Summary	- a total of 93% reported 'good and bad' days.

f) Does your language ability vary in specific circumstances? In younger people and children, stress and tiredness are factors which seem to relate significantly to differences in language ability. For this reason, many American schools and remedial centres offer help first thing in the morning, BEFORE the child goes to school. In posing this question to adults it was hoped to get an indication of the factors affecting performance, the frequency they occurred, and how many affected the individual.

The factors identified as being most commonly associated with language fluctuation were:-

1. When tired
2. Involving frustrating tasks
3. Stress
4. Examinations
5. Being observed.

Subjects were then asked which, if any, applied to them and these were recorded. The most frequent factors were then put in descending order:-

TABLE 42

Examinations	(23)	77%
Being observed	(22)	73%
Stress	(19)	63%
Tiredness	(12)	40%
Frustrating tasks	(8)	26%

From the subjects' reports it was also possible to calculate how severely they were affected by allocating a value on the scale 1 to 5, 1 indicating that the subject was not affected by any of these factors, and 5 indicating that the subject was affected by more than 3 factors.

TABLE 43

	\bar{x}	S.D.
Further Education	3.9	1.19
Higher Education	3.6	0.69
Open University	3.7	1.40
Summary - Most subjects are seen as being influenced by more than two factors.		

g) Does your language difficulty differ when you have drunk alcohol? Since reports of drugs from caffeine to paracetamol have been shown to influence the performance of general and specific populations, it was of particular interest to find out if alcohol affected subjects' written language skills. With an adult population, it was expected that they would have established patterns in terms of domestic routine, which might indicate whether a subject who was accustomed to drinking at lunchtime found written language harder or easier in the afternoon, or if subjects found alcohol a better aid to studying than coffee. In the event, no subject found alcohol affected written language performance. The majority (20 subjects or 64%) rarely drank alcohol at all, and felt they could be described as teetotalers. The other 10 reported drinking rather, or comparatively, little (the occasional beer). Although the tendency had

shown in the pilot study, no provision had been made for subsidiary questions about why subjects chose not to drink alcohol. As the pattern became apparent, the question 'why' was asked, but out of the last 20 subjects who were questioned, the majority felt they had no particular reason, and a minority said they found it detrimentally affected their abilities. One subject reported that he actually avoided drinking alcohol since it impaired his control of his own abilities which had been so hard to develop.

h) What do you hope to gain from this assessment?

When initially seeking possible subjects, many universities and colleges admitted leaving students with learning students with learning difficulties which were not clearly understood. Unfortunately, this information was usually held by sources such as the Medical Centre or Student Counselling Service who could do no more than advise students that they could be assessed free of charge in return for co-operation in research. As a result, a large number of adults from different sources were assessed, although very few satisfied the educational criteria to warrant inclusion in this research. Those who did were asked 'What do you hope to gain from being assessed'. The results are tabulated below and suggest that for the majority, the motive was to obtain a clearer indication as to their abilities (often in terms of intellect) and some idea about how pervasive their problems were. None of the subjects suggested that they had been instructed by their employers, but four subjects indicated that an assessment would influence others and assist in obtaining recognition or exam concessions.

TABLE 44

Clearer understanding of self and nature of difficulties	X X X X X X X X X X X X X X X X	(15) 50%
Altruistic and to aid research	X X X X X X X X	(8) 26.6%
Reassurance, confidence	X X X X X X	(6) 20%
Advice	X X X	(3) 10%
Exam concessions	X X	(2) 6.6%
Help	X X	(2) 6.6%
Recognition by others	X X	(2) 6.6%

6. Strategies and Education. The remainder of the questions asked dealt with aspects related to the subject's decision to undertake further education, the difficulties they were encountering, and what strategies they adopted to overcome their problems. Several subjects who were assessed later proved to be unsuitable for inclusion in this study because they were unable to accept the difficulties they might face in attempting an educational-type course. Failure to understand their own problems, and the fact that their difficulties may have been wrongly attributed in the past, has meant that some adults have merely aged and failed to adjust to their difficulties. This lack of rationalisation, or perhaps insight, into the nature of their problem was evident in the subjects who had both a language learning difficulty and psychological and psychiatric problems. During the course of this research, one subject died as a result of the inappropriate use of a car jack (possibly because he could not read the basic instructions) and a possible subject committed suicide when given leave, having been offered promotion providing he undertook a particular course. In these circumstances, the factors surrounding those subjects choosing to return to education despite earlier histories

of difficulties and failures are of particular interest.

a) Why are you back in education? This question was a partly factual one, attempting to quantify the main influences affecting the decisions by adults to return to education. The answers revealed two major influences:-

TABLE 45

Personal development	X X X X X X X X X X X X X (12)	40%
Qualifications - career	X X X X X X X X X X X X X (12)	40%
Ambition - fulfilment	X X X X X X (6)	20%

These answers suggest that the subjects remain aware of their difficulties, but may feel one influence more keenly than another. Follow-up explanations such as 'its my employer's wish', and 'I was offered a grant', and 'to read to my children' were in the minority, although keenly felt by those subjects.

b) Did the views of 'significant others' influence your decision? This was asked in the context of taking the decision to return to education, whether full time or part time:

TABLE 46

	Yes	No
Further Education	6	4
Higher Education	4	6
Open University	4	6
	47%	53%

Summary - the majority felt that the views of others had not influenced their decision to return to education.

Although the differences are not significant, nor do they correlate significantly with other aspects, the distribution was not as might have been predicted. Since Higher Education in these cases involved full-time study, it might have been expected that 'significant others' might have tried hard to

influence a choice which could radically alter the subject's earning potential in the short term. With Open University students, the commitment to regular studying is such a pervasive feature that they are urged to discuss it with those close to them who might be affected. The fact that 6 Further Education students reported that 'significant others' influenced their decision, may conversely suggest that their difficulties were not noticeable that others urged action, or they might have had ideas of entering Higher Education but were persuaded to take shorter or part-time courses.

c) Did you return to education for personal reasons?

Feelings of inadequacy during and when leaving school have already been highlighted. For many adults a clearer understanding of the precise nature of the problem is not sufficient. Several studies have suggested that adults continue to feel that they are unfulfilled. To distinguish whether this was a possible factor, subjects were asked whether their return to education was for personal reason, fulfilment - personal development, or just to prove to themselves that they could do it.

TABLE 47

	Yes	No
Further Education	8	2
Higher Education	9	1
Open University	<u>10</u>	<u>0</u>
	90%	10%

Summary - the vast majority were in education for personal reasons.

The difference between the groups seems to be closely related to the increase in mean age for each group. Overall this factor was found to correlate with whether the subject's job involved reading (.33 $P < .05$) and it also correlated at the

same level with lateness in learning to read. The total scores suggest that for 90% of subjects, personal reasons had influenced their decision to return to education.

d) Did your written language difficulty influence your choice of course or college? The three groups are served by educational institutions with distinct characteristics. Further Education is normally available within close proximity to the subject's home, so that even part-time courses can be attended regularly without moving home. Higher Education, in the subjects covered by this study, involved full-time study supported by a grant and frequently meant moving home. The Open University students have the advantage of a part-time course, which comes through the post to them, and is supported by tutorials at regional centres. The question posed about choice was aimed at finding out whether the individual's particular learning differences affected their choice within a particular form of provision, rather than indicating a choice between the forms themselves.

TABLE 48

	Yes	No
Further Education	9	1
Higher Education	8	2
Open University	<u>6</u>	<u>4</u>
	76%	24%

Summary - more than $\frac{2}{3}$ of all subjects were influenced by their difficulties in choosing their course or college.

The result is seen as confirming the fact that for the majority of students the interaction between their difficulties and the attitude or demands of the course are the main criteria. However, with Open University students, the lack of a comparable alternative may have been a factor which limited their choice.

e) Have you had any remedial language help since leaving school? The American Junior/Community College system seems to have given rise to a wider range of remedial programmes designed for adult students. The fact that credits can be obtained, even at degree level, for being a student on a remedial programme remains unacceptable within the British tradition. The British Adult Literacy Movement has done much valuable work in helping individuals and changing the climate of opinion, so that seeking help with basic skills is no longer an admission of failure or liable to social ridicule. Still, many adults are reluctant to seek help, and may prefer to adopt other strategies rather than overcoming the basic difficulty. The question whether the individual had received any help since leaving school was deliberately open-ended. It could thus accommodate differences in duration of help, source of help and form of help. Some individuals in the pilot study sought help only from a sympathetic spouse or parents, others (usually during their 'late' teens) had sought professional help or formed self-help and study groups early in their courses. The question avoided a qualitative measurement and is merely a quantative measure.

TABLE 49

	Yes	No
Further Education	4	6
Higher Education	5	5
Open University	<u>4</u>	<u>6</u>
	43%	57%

Summary - less than half had received additional help since leaving school.

The fact that 43% sought some form of help since leaving school is seen as a reflection of the fact that a dyslexic type difficulty has social and vocational implications as well as the educational aspects normally associated with it.

f) Are you going to seek help in the future? Since personal development and vocational aspects were given as the main reasons for returning to education, it seemed logical after the question as to whether they had sought help, to ask if help would be sought in the future. The fact that there was a low correlation between answers on these questions might have been explained had there been a negative correlation, suggesting that those who had sought help had been satisfied and would not be seeking more help. In fact, the answers did not relate so much to previous help, but seemed more related to the age of the subject.

TABLE 50

	Yes	No
Further Education	6	4
Higher Education	4	6
Open University	<u>0</u>	<u>10</u>
	33%	67%

Summary - the vast majority were not going to seek help.

The Further Education group's scores suggest that more students would seek help in the future than had in the past. This might be an age related factor, or might indicate something about their *feelings concerning returning* to education and a more positive attitude to the student support facilities offered in Further Education. The dramatic change occurred with the Open University students, none of whom were prepared to seek help.

It remains open to speculation whether their higher age level was a factor, if their higher IQ levels made a difference to their attitudes, or possibly that they had adopted strategies which allowed them to function adequately and they felt they did not need to seek help. The answers

to the question whether subjects would seek help correlated significantly (.37 P .05) with results in school leaving exams, and with the picture the individual had of his/her abilities when leaving school (.31 P .05).

g) Has your written language difficulty affected your learning, i.e. notes, reading or memory? There was only one answer given to this question, with all subjects (100%) confirming that they had experienced learning difficulties. They often complained that they had considerably more trouble than their peers.

h) Do your difficulties affect your written performance, i.e. course work, exams? All subjects reported that they found difficulty with written work and felt they did less well in exams or in essays as compared with their potential or ability as evidenced in tutorials.

i) What are your main difficulties at College? This question sought clarification and examples of the difficulties so unanimously confirmed in previous questions, and the subjects' responses, although affected by their most recent experiences, are thought to be representable of the priority described in case studies.

TABLE 51

Written Work, Writing /Spelling/Essays	X X X X X X X X X X X X X X X X	(25)	83.3%
Note taking	X X X X X X X X X X X X X X X X	(15)	50.0%
Exams	X X X X X X X X X X X	(10)	33.3%
Slower	X X X X X X X X X X	(9)	30.0%
Memory	X X X X X	(5)	16.6%
Key concepts	X X X	(3)	10.0%
Self organisation	X X X	(3)	10.0%
Revision	X X	(2)	6.6%
Emotional	X X	(2)	6.6%
Mathematics	X	(1)	3.3%
Sequencing	X	(1)	3.3%

Structuring time	X	(1) 3.3%
Speech	X	(1) 3.3%
Coloured paper and type styles	X	(1) 3.3%

j) How have you tried to come to terms with your difficulties? This question tried to identify what has been referred to as 'coping strategies' (Gauntlett 1982). These techniques are thought to be the 'positive' adaptive responses, and enable the individual to function as efficiently as possible within the constraints imposed by the difficulty. The avoidance strategies on the other hand, are often 'negative' and aim to prevent detection by denial or avoiding situations when the difficulty might be recognised. Coping strategies notes in the past included typing, notes, diagrams, using a tape recorder, efficient learning techniques, speed reading and asking a good speller. The following table is a compilation of all the subjects' answers about how they cope.

TABLE 52

Notes and diagrams	X X X X X X X X X X X X X X X X X X X	(17) 56.6%
Spouse helps or asks good speller	X X X X X X X X X X X X X X X X X X	(16) 53.3%
Typed	X X X X X X X X X X X X X X	(13) 43.3%
Efficient learning	X X X X X X X X X	(8) 26.6%
Work harder	X X X X X X X X X	(8) 26.6%
Rewrite and correct	X X X X X X X X X	(8) 26.6%
Tape record	X X X X X X	(6) 20.0%
Dictionary	X X X X	(4) 13.3%
Memorise	X X X	(3) 10.0%
Frequent words learnt by rote	X X	(2) 6.6%
Guess from context	X	(1) 3.3%
Speed reading	X	(1) 3.3%
Psychotherapy	X	(1) 3.3%
Year off	X	(1) 3.3%
Remedial help	X	(1) 3.3%
Copies standard examples	X	(1) 3.3%

Abbreviations	X	(1) 3.3%
Shorthand (own)	X	(1) 3.3%
Spells phonetically	X	(1) 3.3%

k) Are your tutors/college understanding? Responses to this question suggest that the attitudes of individual members of staff, whether acting as personal tutor, or in some way representing the institution, are seen as being likely to be unhelpful or helpful. The earlier reported survey of Universities and the B.D.A. survey of Colleges, suggested much of the institute's attitude relied upon the interface between tutor and student. Answers to this question indicate:-

TABLE 53

	Yes	No
Further Education	3	7
Higher Education	6	4
Open University	<u>7</u>	<u>3</u>
	53%	46%

Summary - the majority found tutors or colleges understanding.

The results reflect the ambivalent attitude of subjects who reported finding mixed attitudes to their difficulties. Some tutors had been helpful suggesting assessment or concessions in exams, others were unhelpful either because they did not know that there could be a specific language learning difficulty and some were antagonistic to the concept.

1) Do you have any special concessions in course work or exams? This was a direct question amenable to numerical analysis. Yet because of the ambivalent attitudes of some staff and colleges, and since this assessment might affect future concessions, subjects had to answer about what happened up to that time.

TABLE 54

	Yes	No
Further Education	4	6
Higher Education	3	7
Open University	<u>4</u>	<u>6</u>
	37%	63%

The consistency between groups is of considerable interest here since it might have been expected that students in Further Education might have been guided towards courses at either the General Certificate of Education (GCE) level, or courses/exams of more sympathetic bodies such as the City & Guilds of the London Institute. There was very little difference between groups, all groups indicating that fewer received concessions than might have been hoped, and that includes the Open University with a policy of positive discrimination towards handicapped students (only so far as they are then equal to their non-handicapped peers). The concessions obtained included more time in exams, tolerance of spelling, and allowed to type. There were no reports of an amenuensis or having the paper read. The only significant correlation was with answers to the question about concealing difficulties (.32 $P < .05$).

m) Do you try to conceal your difficulty? 93% (28) subjects reported that they did try to conceal their difficulties. This factor was found to correlate significantly with the subject's job (.35 $P < .05$), the outcome of earlier testing (.42 $P < .05$) and concessions (.32 $P < .05$).

n) Do you conceal your difficulties generally or only in specific circumstances? It was clear from answers to this question that most dyslexic students attempt to hide their difficulty in all circumstances, especially in the presence of strangers. Five subjects reported that they only attempted to hide their difficulties in specific

circumstances, i.e. from their employers or strangers.

Statistical Analysis

Correlations. From the original questions, 58 were selected as being suitable for converting to numerical data for computer analysis. The analysis undertaken involved the Principle Components of Association, measured as Lambda Coefficients, using the SPSS statistical package. From each factor there was a correlation calculated in comparison with every other factor, providing 58 x 58 correlation coefficients (3364). These were then examined to ascertain their critical value with 30df (degrees of freedom). The level of significance based on a 1 tailed test has been used in reviewing the answers to individual questions. Possible explanations for the low number of significant correlations may include constraints imposed by:-

- a) only 30 subjects;
- b) ten subjects from each of three groups;
- c) that the questions sought descriptive data and were not formulated to investigate a hypothesis of cause and effect;
- d) the only thing these adult subjects had in common was a specific language learning difficulty and involvement in education.

Lambda Coefficients. The degree of correlation, and an indication of its level of significance, have been included in the text where appropriate

Further Analysis

Multi-Dimensional Scaling. A further analysis of the relationship between the factors was made using the technique known as Multi-Dimensional Scaling. The MDS (X) 3 Program (1977) permits each factor to be compared with every other factor in multi-dimensional space. The problem comes in

portraying this in a limited number of dimensions.

Two attempts at portrayal of these relationships was attempted using Shepherd Diagrams. Calculations involved using $\text{Fit} \neq \text{DHAT}$; $\text{Alogorith} = \text{Hard Squeeze}$. There are six illustrations:-

1. Solutions in 3 dimensional space:-
 - a) Dimension 2 plotted against dimension 1. (Figure 11; p 257)
 - b) Dimension 2 plotted against dimension 3. (Figure 12 p258)
 - c) Dimension 3 plotted against dimension 1. (Figure 13 p259)(In all the above diagrams the numbers correspond to subjects.)
2. An attempt to plot the 3 dimensional data in graph form, against fitted values. (Figure 14)
3. Solutions in 2 dimensional space. (Figure 15)
4. Two dimensional data plotted in graph form against fitted values. (Figure 16)

The Shepherd diagrams (Figures 14 - 16) suggest a comparatively close linear relationship. Although the correlations were not significant at P.05 or less, this may have been due to the comparatively small sample size. In Figure 15 where the results are displayed in two dimensions they do follow a comparatively narrow path, possibly reflecting the many shared characteristics of the sample.

The diagrams (Figures 11 - 16) indicate the positions of individual subjects as numbers. Further Education subjects were Nos. 1-10 incl., Higher Education subjects were Nos. 11-20 incl., and Open University subjects were Nos. 21-30 incl. Since the calculations were on the basis of the subjects rather than the questions, it has been impossible to assign a meaning to the dimensions against which they are plotted. It would be desirable to analyse the data again on the basis of questions in the hope of identifying the main differences between subjects. Having subjected the first three Figures to visual analysis, it was

possible to confirm some broad differences on the two dimensional representation (Figure 10.) Dimension 1 is related on the positive side to subjects not having been assessed previously, and having a family history of specific learning difficulties. Negative scores were associated with having been previously assessed, by not having a familial history of dyslexia.

The subjects from Further and Higher Education were grouped quite closely with a range plotted on Dimension 2. The exception to this was subject 15. The Open University subjects were widely dispersed on Dimension 2, but within the ± 50 range on Dimension 1.

Dimension 2 seems to have had high scores associated with straight-forward childhood development and lower levels of reading difficulty. A low score (negative value) was associated with late development and reading problems.

Multi-dimensional scaling was still a comparatively new technique when undertaken for this study. It may be that further research could usefully be carried out on this data. This might look at a comparison of the dimensions revealed by plotting data against the questions rather than the subjects. From such a study might be obtained a clearer understanding of what dimensions revealed actually involve.

Figure 11

Multi-dimensional scaling.

dimension 2 plotted against dimension 1.

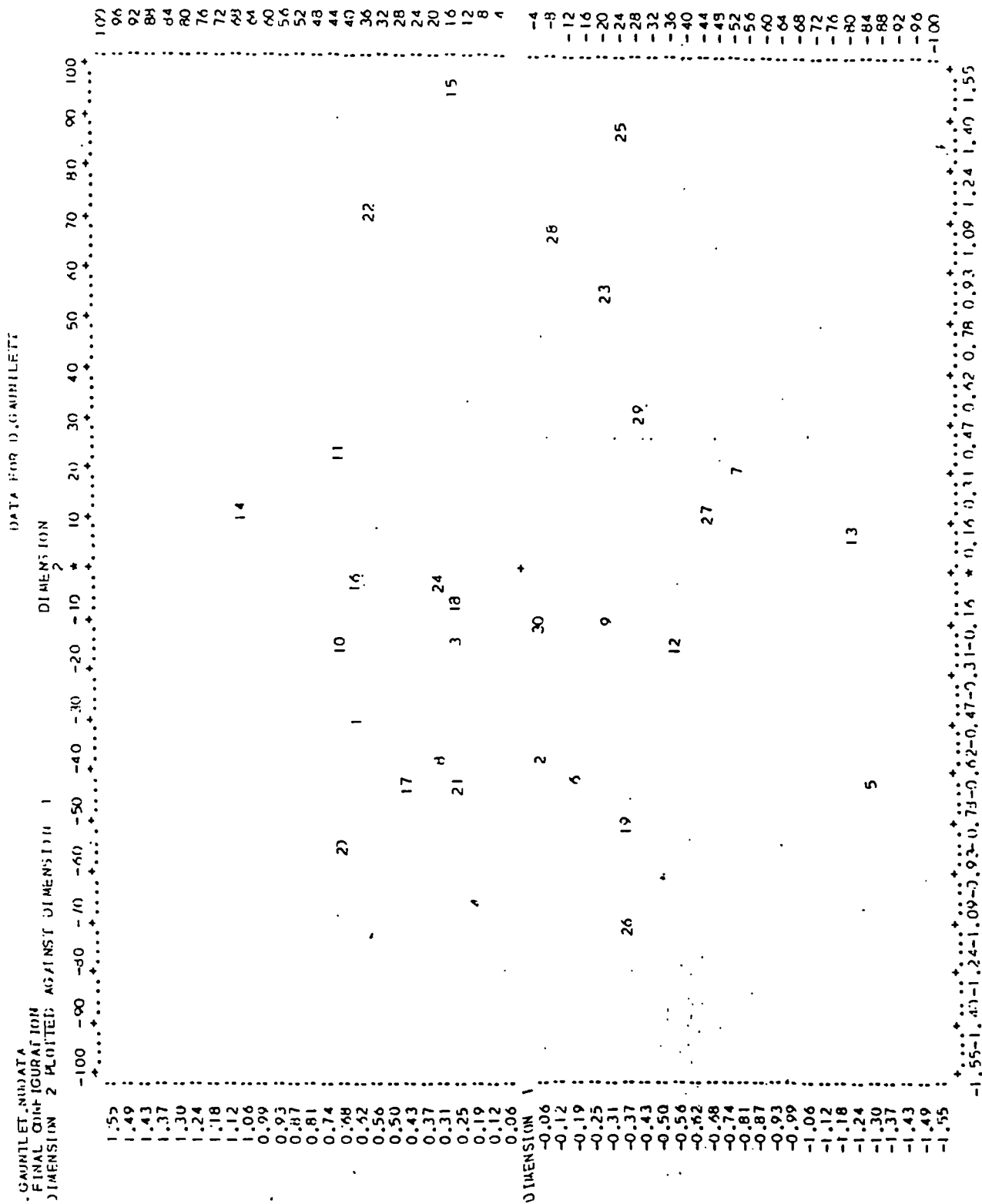


Figure 12.
Multi-dimensional scaling.
Dimension 3 plotted against dimension 2.

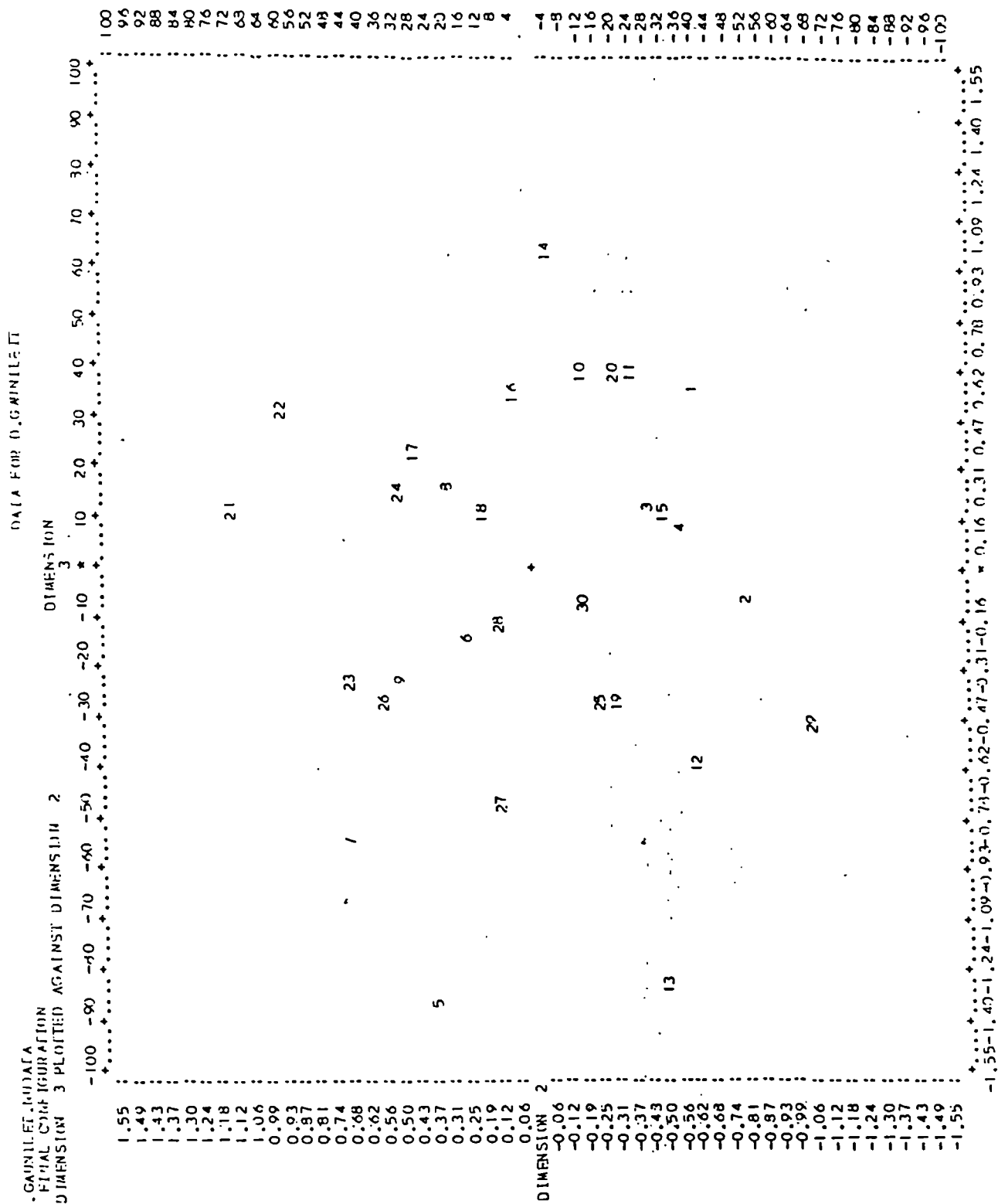


Figure 13.
Multi-dimensional scaling.
Dimension 3 plotted against dimension 1.

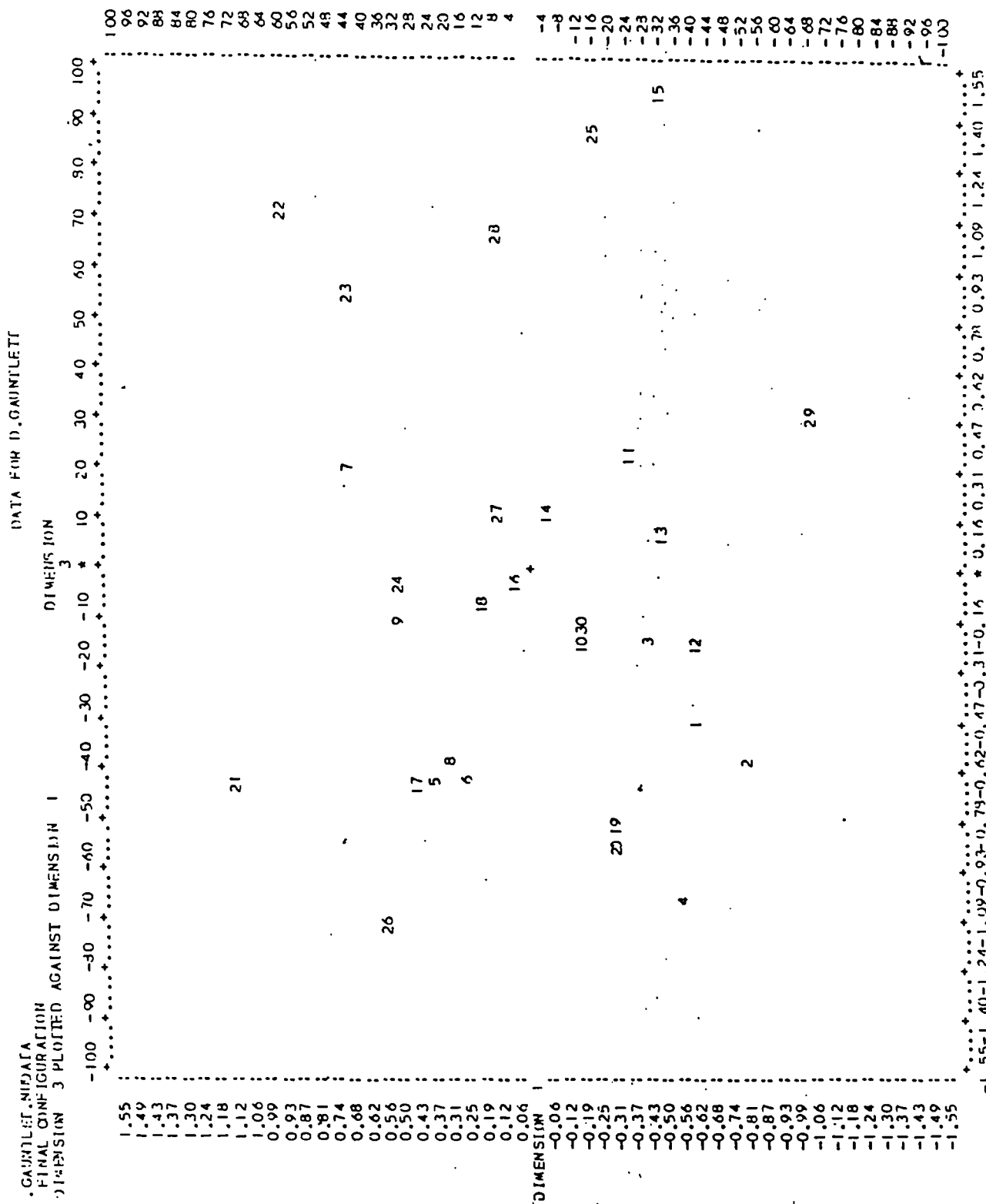


Figure 14.

3 dimensions printed as a graph.

SHEPARD DIAGRAM

,GAUNTLET.NUDATA

DATA FOR D.GAUNTLETT

SIMILARITY

0 -- DISTANCES * -- FITTED VALUES

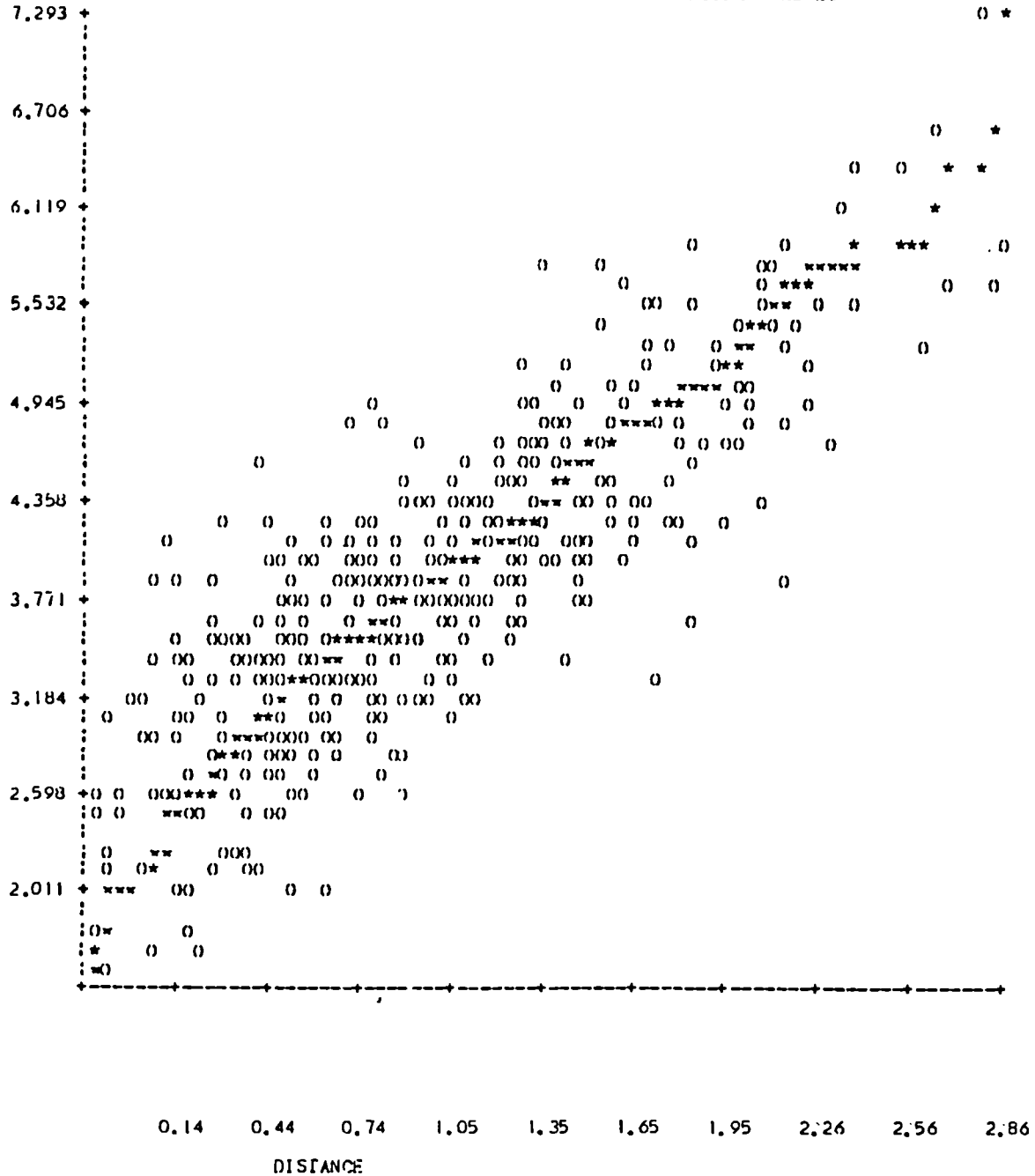


Figure 15.

Factors forming the principal components
from Lambda coefficients

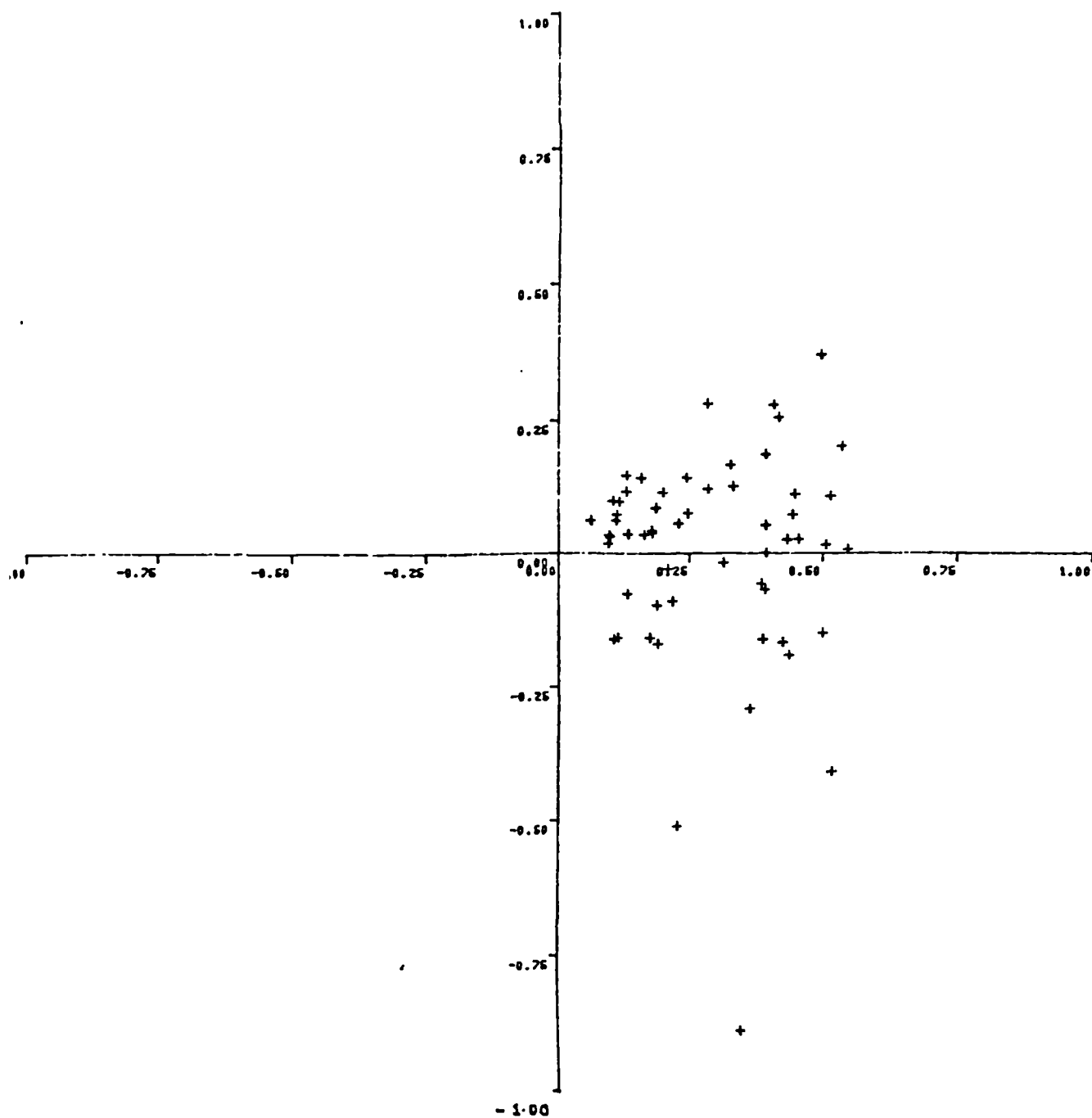


Figure 16.

SHEPARD DIAGRAM

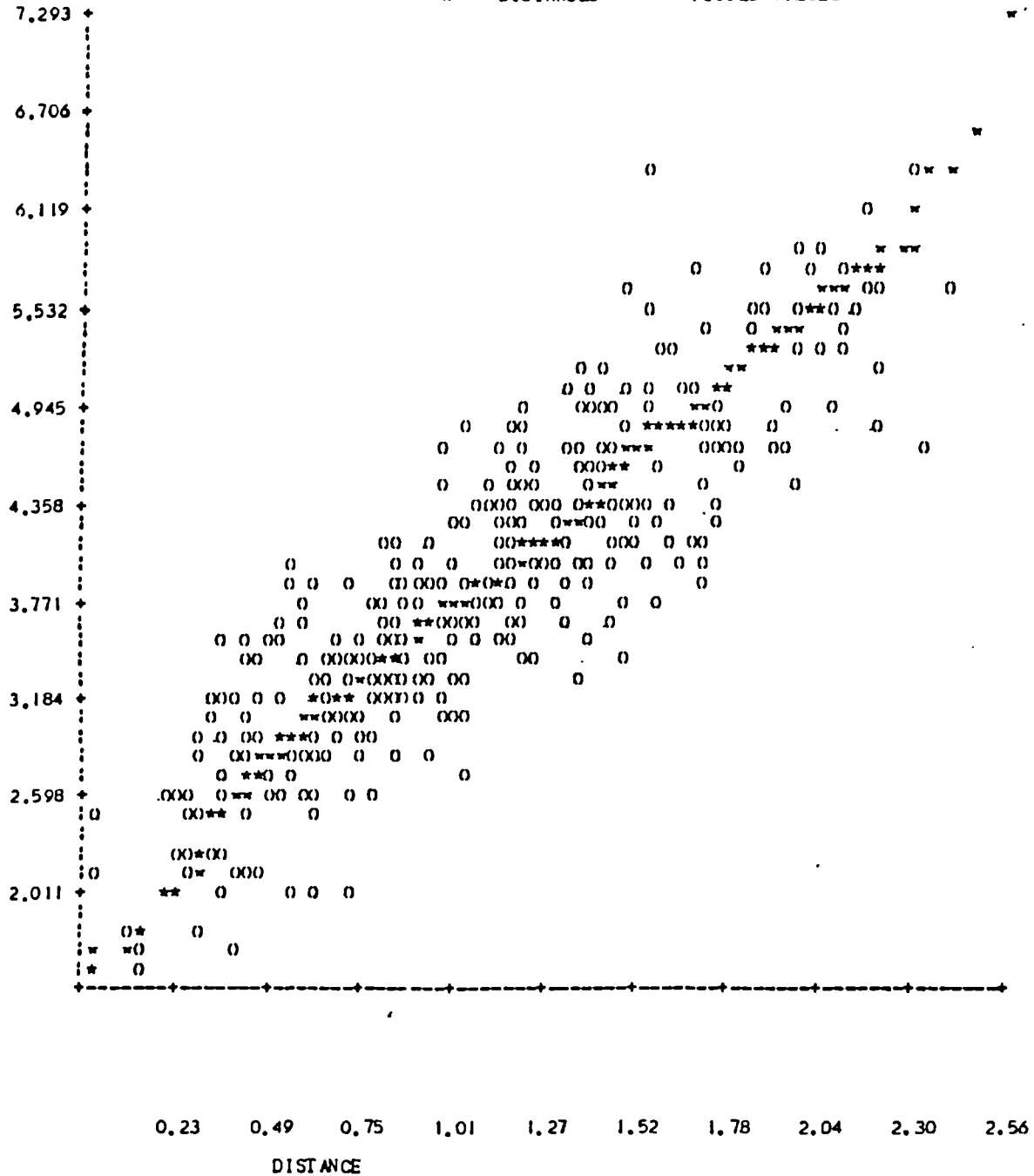
Two dimensions plotted as a graph.

.GAUNTLET.NUOATA

DATA FOR D.GAUNTLETT

SIMILARITY

0 -- DISTANCES * -- FITTED VALUES



Assessment of Reading and Spelling

A crucial component in any description of dyslexia is a discrepancy between the individual's potential measured in terms of intellect, and their written language skills in terms of reading and spelling. Some reviews of specific language learning difficulties have stressed the problem of learning to read (Tizard 1972, Bullock 1975). In some case studies (Hampshire 1981) and in evidence to the British Psychological Society, the British Dyslexia Association (1982) stressed the fact that spelling is a major problem, and one that often continues into adult life.

Despite the belief that spelling difficulty may be critical in diagnosis, especially in adolescents and adults (Orton 1931, Hallgren 1950, Dozier 1963, Gallagher 1963, Saunders 1963, Chall 1967), very few researchers have used spelling as the criteria in assessment.

"But for practical purposes, particularly when it is an adolescent who presents the problem, in deciding whether specific language disability is the major cause of failure for which the pupil should receive a special type of remedial instruction, the spelling should be peculiar."

Gallagher 1963.

"There are also adults who drag along an often undiscovered kind of dyslexia ... the discovery of dyslexia in a young child is relatively easy. The older the child grows the more difficult becomes the diagnosis as he starts to compensate for his reading with words unknown to him, one may get the impression that he reads normally. Mis-spelling often indicates dyslexia, for instance, when a child 15 years of age with a normal intelligence encounters great trouble with spelling."

Hearns 1969.

"Disorders of writing are always considerable in cases of developmental dyslexia, although they may not attract the same attention ... In the case of a 'cured' dyslexic, defective writing and spelling may continue to appear long into adult life ... mistakes are of such a nature as often to make it possible to diagnose the reading defect from a mere perusal of the script."

Critchley 1970.

In her thesis on 'cognitive style variables' Halitsky (1976) suggests that:-

"Reading achievement cannot be used as the sole or major criterion for establishing the existence of dyslexia, especially in adolescents or adults ... successfully remediated and compensated dyslexics with adequate reading achievement usually have spelling and writing handicaps which continue to plague them throughout adolescence and adulthood and which give evidence of their underlying disorder. It is this sub-group, namely the 'residual dyslexics' which has received little attention in the research of the problem."

"The poor spelling was felt to represent the residual of an initial global language disability that had been partially overcome by the time of adulthood."

Perlo & Rak (1971).

Several explanations have been advanced for this. This may be a phenomena created by placing the emphasis on reading in primary school, and secondly because reading is often done aloud and difficulties are therefore noticed earlier; spelling problems may be concealed by developmental and writing differences. Although reading difficulty is often subject to additional help, some teachers believe that a spontaneous improvement in spelling will follow. Fourthly, secondary education is geared towards the acquisition of knowledge, rather than basic skills, failure to express knowledge may be treated as an indication of lower ability rather than recognised as a specific difficulty. Lastly, reading changes from an oral to a silent mode by secondary school, allowing students to concentrate on reading silently for comprehension, without the embarrassment and possible emotional connotations of reading aloud.

In comparison, spelling becomes more important in teenage and adult life. It is an obvious, often public and enduring, form, unlike the private act of silent reading. Errors are

often remarked upon in educational, vocational and private life. Mis-spelt telephone messages may be comparatively trivial, but remarks are often made between colleagues, and corrected spelling errors often 'get back' to the perpetrator whether by accident or design. Few employers or acquaintances would correct a mispronounced word, but many will point out spelling mistakes, omitted letters or transposed letters. Subjects often report adverse comments about spelling, some have been threatened with dismissal, while others have been refused promotion. There are comparatively few reports of complaints resulting from slow reading. Even illiterate adults can be taught to recognise the limited number of words and/or symbols necessary for safety and basic employment.

In assessing subjects' written language skills, psychologists are faced with similar problems. The administratively simple word recognition tests are popular because of their speed and simplicity. Unfortunately, even reading tests providing information on reading speed, comprehension and accuracy rely upon oral reading, usually scored against age or grade normed criteria. Criteria centred assessment formed a bridge between the advantages of subject centred teaching and graded word tests. However, profiling is impractical during a conventional assessment due to time constraints. As a result, psychologists who require a measure of reading and spelling ability for an adult are pressured into using tests originally developed for children. The majority of these have a major disadvantage in that they provide data in the form of age related norms, which even when compared with the level which might have been expected of a school leaver, make few concessions for the changing skills required of adults.

Two forms of test are available for use with adults. These involve Fixed (or Normed) and Variable criteria (Criteria referenced tests). A Fixed criteria was employed in assessing the reading skills of adults in this study. This involved the reading of a passage of prose silently, and answering questions about the passage. For simplicity the advanced passages employed in the Neal Analysis of Reading Ability (1966) were used. These passages have the advantage of being normed for young people up to an 'adult' reading speed (100 wpm) and accompanied by comprehension questions.

Lists of tests are available in the appendix of books such as Vincent & Cresswell 1978, their characteristics are reviewed by Raggett et al 1979, and Pumfrey 1977. Of those suitable for use with adults, the Nelson-Denny is one of the few which provides reading speed norms. Harris & Spay (1977) make the point that reading rates can be misleading because results vary according to the nature of the material used, and as to the type of comprehension checks employed (Carlson 1951). The ability to select a particular reading approach is advocated (Harris & Spay 1977) varying from skimming, rapid reading, normal rate or slowest and careful rate. They suggest that an adult should be able to read light fiction or easy non-fiction "at a rate of at least 400 words per minute ... a person's normal reading rate, for somewhat more careful reading, may be only two thirds as fast as his most rapid reading". In their table of grade related speeds, their findings are similar to Brown et al (1981) and Humphrey K.H. (1957) in suggesting that at Grade 12 (18 years old) a reading speed of between 250 and 300 wpm might be expected. Reading

under test conditions and knowing that questions about comprehension will be asked, might be expected to reduce the average adult rate, although the lowest score on the Nelson-Denny test does not fall below 260 wpm.

For the purpose of assessing the subjects reported on in this study, their abilities were compared with a 'Fixed' criteria which was thought to be a basic measure of adult ability. The expected reading speed was set at 150 words per minute, with an accuracy of six answers correct out of eight. The Handbook for the Neal Analysis suggests that a reading speed of 100 wpm is achieved by 13 years of age, above that level is adult ability. Where subjects failed to achieve this level of accuracy, the task was explained again with the request that they tried to attain that level of accuracy, and a different passage of similar length and complexity was read. This criteria is ultimately a measure of reading speed, above or below 150 wpm, with a measured accuracy level. The results indicated:-

TABLE 55

Further Education	-	6 subjects read below 150 wpm Range -93 to +88. \bar{x} = 115.
Higher Education	-	4 subjects read below 150 wpm Range -56 to +88. \bar{x} = 153.2
Open University	-	6 subjects read below 150 wpm Range -30 to +147. \bar{x} = 155.9

In all groups a total of 16 subjects read below the speed of 150 wpm, that is 53%. The selection of any criteria without established norms is open to criticism, since the comparison is suspect and the argument for that criteria may be circular. To describe the subjects' reading scores more accurately, since other researchers may choose different speed criteria, the following diagram is offered. From this it can be seen that if the criteria of 200 wpm

reading silently had been used, only 3 subjects would have been recorded as reading adequately.

FIGURE 17.

Words per Min.	Further Education	Higher Education	Open University	Total
250			x	1
200		x		2
150	x x	x x	x	11
100		x	x x	7
50	x x x x	x x	x x x	8
0				1
	$\bar{x} = 115$	$\bar{x} = 153.2$	$\bar{x} = 155.9$	

These results suggest that only one subject would have achieved a score on the Nelson-Denny test, and then in the lowest 20%ile.

Spelling.

For measuring spelling, a test which provided a standardised score was thought to be desirable. The Wide Range Achievement Test (WRAT) - Jastak & Jastak 1978 - was chosen since it is a graded word test, with norms covering the adult range, and in their words "the standard score is comparable to the IQ or deviation scores of standard tests". In support of this claim correlations between the WRAT and the Wechsler Intelligence Tests are provided. This is essentially a 'variable' criteria and for the purposes of clinical assessment a discrepancy of 10 points between the standardised score and the subject's Full Scale IQ was taken as significant, and an analysis of the types of spelling mistakes was used to identify any superficial patterns. This criteria proved to be far more rigorous, and no subjects were able to

spell at or above this level, all are described as failing to attain the level expected, given their age and intellectual level.

TABLE 56

Further Education	- All subjects significantly below expected ability. Range -80 to -10. $\bar{x} = -47.0$
Higher Education	- All subjects significantly below expected ability. Range -60 to -10. $\bar{x} = -32.0$
Open University	- All subjects significantly below expected ability. Range -60 to -20. $\bar{x} = -32.5$

The mean scores on the spelling test indicate a considerable difference between subjects in Further Education and those in Higher Education or the Open University. The range of scores also decreases, but not significantly as the groups get older. This pattern is similar to the pattern of mean scores achieved on reading tests. These figures suggest that there is a 'spontaneous' improvement, since none of the Higher Education or Open University students reported having had additional help, and this is seen as a factor more related to intellect rather than education.

Attainment in Language Skills. From this study it would seem to be desirable to develop a set of suitable normed British tests for reading and spelling ability in adults. Ideally, these should permit comparison in the form of standardised scores with the subject's IQ. Such 'flexible' criteria are not at present available in a simple and easy to use form which would enable the psychologist to compare silent reading ability in adults with intellectual potential. Although adequate spelling tests exist, the WRAT could, with advantage, be normed on a British population, or the Vernon Graded Word Test might usefully be converted to standard-

ised scores rather than the present age related scores. Graded Word Reading Tests are not considered an adequate indication of adult ability. Reading passages of prose is a more realistic task, but is in adult life a silent activity and it is felt unrealistic to assess reading ability or oral pronunciation.

Summary

Although assessment of reading and spelling difficulties in adults is complicated by methodological questions, assessment of adults who failed to acquire the normal level of competence in childhood is often fraught with the additional difficulties arising from emotional attitudes and in assessing the effect of stress. In this study, tests were chosen which were quick and easy to administer, and which provided numerical data for the purposes of comparison rather than as diagnostic tools for remedial education. On the reading test, consisting of silently reading passages of prose and then answering comprehension questions, the majority of adults were found to read at a speed below 150 wpm. Had the number of words per minute been set at 200 wpm, only 3 subjects would have been classed as achieving adult ability level. The Graded Word Spelling Test permitted a standardised score to be compared with the individual's intellectual level. The mean discrepancy between standardised spelling scores and full scale IQ scores suggests that these adults continue to have significant spelling problems. All subjects experienced significant spelling difficulties, whereas the 'fixed' criteria on the reading test may have been unrealistically low, given the range of intellect within the subject population. An adult's prose reading ability measured in the form of British standardised scores is advocated,

and failing this, the adoption of the criteria of 200 words per minute silent reading speed as the criteria by which an adult might be considered to be experiencing reading difficulty.

TESTING GENERAL INTELLIGENCE

The Wechsler Intelligence Test of Intellectual Ability was chosen initially because it is the most frequently used and reported form of IQ test. Secondly, it provides information on the individual's abilities as measured on some eleven tests grouped into two scales, which provide measures of Verbal and Performance IQ. The first form of the Wechsler scales known as the Wechsler-Bellevue Intelligence Scale, was published in 1939. A primary objective was to provide a test suitable for adults, whereas previously available tests were primarily for school children. The earlier form had several technical deficiencies and was superceded by the Wechsler Adult Intelligence Scale (WAIS) in 1955 (Wechsler 1955). The Wechsler Intelligence Scale for Children was initially an extension of the adult test to cover a younger age group. This was published in 1949, and took the same format as the Adult test, with many items being transferred directly from the WAIS and augmented by easier items of the same type. Both versions have undergone revision, the WISC-R (Revised) version was published in 1974, and is now a frequent basis for assessment in Britain (Naidoo 1970, Fowler 1980). The adult WAIS has been revised (1982) but was not available during this research, and by 1984 was not in common use in Britain.

The original concept of calculating Intelligence Quotient (IQ) as being Mental Age divided by Chronological Age, is

not appropriate for adults. Even for children there are problems in using this formula with individuals whose ratings are a considerable distance above or below the average for their age. There must also be an allowance for periods when mental growth is rapid, which would lead the IQ to be above the mean for the entire population. Mental age does not remain constant throughout adult life, but declines progressively on a number of the Wechsler type tests. Matarazzo (1976) supports the use of the IQ concept:-

"Actually the IQ remains a basic concept in the measurement of intelligence and indeed, as an unequivocal definition of the currently testable aspects of intellectual functioning as is possible. The IQ merely states that a person's intelligence test score at a given time is defined by his relative standing among his age peers."

Patterns Indicative of Specific Learning Difficulties

The specific nature of the language learning difficulty is generally accepted as excluding those subjects with abnormally low intelligence, primary emotional problems or identifiable neurological damage. Efforts continue to classify those with SLD or Dyslexia. From the British research, Tansley & Pankhurst (1981) concluded that:-

"the case has been made for the term specific learning difficulty as a generic term which embraces dyslexia and specific learning disability."

Generally, there continues to be problems with aetiology and terminology, with Clements (1966) listing 38 different terms. Ingram (1967 & 1968) described two groups according to their learning difficulties. The 'specific' group had specific difficulties with reading and spelling only, the 'generals' experienced difficulty with reading, spelling, arithmetic and other learning situations. Yule & Rutter (1976) when reporting results from their Isle of Wight and

London studies, also divided their poor readers into two groups: 'backward readers' were 2 years and 4 months or more behind their chronological age in reading accuracy and comprehension, whereas 'retarded readers' were 2 years and 4 months or more behind the level of reading accuracy and comprehension predicted on the basis of the child's age and IQ.

Rabinovitch (1968) postulated two categories: Primary and Secondary dyslexia. Thompson (1966) suggests three groups:

1. Organic damage;
2. Environmental or social-emotional;
3. Inate or constitutional.

Boder (1971) attempts to classify dyslexia in terms of a "two channel function, requiring the integration of intact visual and auditory processes, peripheral and central".

Her categories are:

1. Dysphonetic - deficit in symbol-sound integration;
2. Dyseidetic - deficit in perceiving letters/words;
3. Alexia - combined dysphonetic and dyseidetic dyslexia - problems in developing phonetic skills and ability to perceive letters/words.

Other investigators (Bateman 1968, Kingsbourne & Warrington 1966, Myklebust 1965) have also proposed three main sub-types of dyslexia, although their criteria are not identical.

Myklebust (1968) advocated using a measure of discrepancy between potential and actual learning. The proposed Learning Quotient became the basis for distinguishing between the 'moderate' and 'severe' learning-disability groups in public school children (Myklebust & Boshes 1969, Myklebust et al 1971).

Using the WISC/WAIS tests

One of the main attractions of these tests has been that they yield several measures of a range of abilities. These are grouped under two 'scales', the Verbal and Performance

scales. From these is calculated a Full Scale score of IQ.

The Verbal Scale consists of six sub-tests - oral presentation.

Information	(I)	measuring acquired verbal knowledge;
Comprehension	(C)	social and practical problem solving;
Arithmetic	(A)	mental arithmetic;
Similarities	(S)	abstract verbal reasoning;
Vocabulary	(V)	defining word meanings;
Digit Span	(DS)	repetition of digits.

The Performance Scale consists of five sub-tests.- concrete-visual and perceptual.

Picture Completion	(PC)	identifying missing detail;
Picture Arrangement	(PA)	sequencing picture story;
Block Design	(BD)	arranging cubes;
Object Assembly	(OA)	arranging pieces to form a whole;
Coding/Digit Symbol	(Co/DS)	matching number and symbols.

Cohen (1959) produced one of the earliest studies involving a factor analysis of the WISC tests, and suggests five groups:-

1. Verbal Comprehension 1 (I,A,S,V)
2. Verbal Comprehension 2 (C,PC)
3. Perceptual (BD,OA)
4. Freedom from distractability (DS,A)
5. Specific Unique Factors (Co,PA)

This has not been widely used despite Spache's (1978) attempts to interpret the pattern in relation to the scores of poor readers. Clements (1964) and Clements & Peters (1967) have suggested the presence of three specific patterns of scores on the WISC:-

WISC Pattern I	- Verbal & Performance scale scores similar; lower scores on A,DS,BD,OA,C.
WISC Pattern II	- Verbal score 15-40 points higher than Performance; lower scores on BD,OA,Co.

WISC Pattern III - Performance Score 10-30 points higher than Verbal; invariably associated with reading disability, sometimes difficulty in verbal expression.

A large number of studies have attempted to identify a pattern among the WISC sub-tests by which the subject with a specific learning difficulty can be identified. Claims have been advanced that dyslexic subjects should score higher on the Performance scale as against the Verbal scale. In studies of learning disabled children by Abrams (1953), Neville (1961), Schittman & Clements (1966), Brown (1966), Naidoo (1972), Anderson, Kaufman et al (1976) and Smith, Coleman et al (1977), significant differences in favour of performance IQ over verbal IQ within the WISC were reported. In a follow-up study by Dykman et al (1973) the L.D. subjects were found to have a greater discrepancy between Verbal and Performance scores (in favour of Performance scores) when re-tested. In studies by Altus (1956), Kallos (1961), Hirst (1960) and Spreen (1981), no significant difference was found. Sattlet (1974) reviewed a large number of studies in this area which showed that children with reading and spelling difficulties have a slight tendency towards superiority on the Performance scale. Huelsman (1970) found a similar pattern in 12 out of 23 studies reviewed. Spache (1976) also examined the possibility of using the discrepancy in assessing retarded readers, but concludes:-

"in twelve of fifteen studies that we have reviewed, including one of our own, P. exceeded V. for either normal or poor readers, and in fact, appears to do so in the original standardisation population for the WISC."

A discrepancy between verbal and performance scale is rarely used as the sole criteria for assessment, partly because it is neither consistent, nor always significant in one direction,

but because the verbal scale also includes sub-tests which may cause this imbalance.

Re-categorisation of Wechsler Intelligence Scale for Children sub-test scores.

There have been a large number of attempts to identify sub-test patterns within the Wechsler IQ tests, starting with Hagan (1952) and Graham (1952). Studies have frequently revealed three or more factors (Gault 1954, Cohen 1959, Baumeister & Bartlett 1962, Beck 1968). Major reviews of this extensive literature have been undertaken (Rugel 1974, Deal 1965, Huelsman 1970) and several reviews have attempted to produce tables comparing sub-test scores (Ekwall 1966, Klassen 1972, Spache 1978, Thomson & Grant 1979). Although valuable, these reviews often do not agree with each other or the numerical data, since conversion from mean scores to a symbolic presentation (+/-/* or H/L) is often a subjective rather than a statistical analysis. In other cases a direct comparison is not possible because the data is provided in the format which does not permit comparison (i.e. $SE\bar{m}$). Other writers such as Cohen (1959) felt that sub-test specificity was so low as to make sub-test profile analysis virtually meaningless. Mosely (1980) and Spache (1978) point out that the predictive validity of factor analysis has not yet been established, although there seems to be considerable agreement that patterns can be identified. Writers such as Spache (1978) and Huelsman (1970) point out that these are characteristics for groups, and are not sufficiently precise to be used as the criteria for identifying individuals.

Four approaches are in general use in re-categorising WISC results, and have been supported by subsequent studies.

These arise from the studies of Bannatyne (1966, 1971 & 1974),

Kaufmann(1979) and Mosley (1980). The 'Third Factor' described by Kaufmann (1979) has also been identified by the other writers, it is based on the Arithmetic, Digit Span and Coding Sub-tests (Miles & Ellis 1981, Miles 1983 and Miles 1983c).

The ACID profile. The frequently reported low scores on the tests of Arithmetic, Coding, Information and Digit Span, has been using the acronym ACID by Swartz (1971). It has been identified in studies by Burke & Bruce (1955), Robeck (1960, 1962 & 1964), Rugel (1974), Johnson & Wollersheim (1977), Schiffman (1962), Coleman (1963) and more recently by Ackerman et al (1977a & 1977b), Miles & Ellis (1981) and Newton (1982). It was found to be highly significant in the scores of reading retardates in Naidoo (1972). In their 1973 study, Dykman et al grouped sub-tests as suggested by Penfield & Roberts (1959) into a 'symbol manipulation factor', based upon Information, Arithmetic and Digit Span, which was found to discriminate reliably between subjects and controls. Frauenheim (1975) identified this pattern in the scores of subjects in a follow-up study, and recently produced a paper (Frauenheim & Hecker 1983) extending the analysis to enable comparison of scores on both the WISC and WAIS tests, using the Bannatyne, Kaufmann and ACID groupings. A similar comparison has been adopted here.

Bannatyne's categorisation was developed during his time at the ICAA 'Word-Blind Centre' in London (Bannatyne 1966). In his 1978 paper Bannatyne advocates the administration of the WISC as an essential part of any assessment, and suggests Analysing the test results into categories of:-

Spacial score	(PC,BD,OA)
Conceptualising score	(C,S,V)
Sequencing score	(DS,PA,Co)

It is possible that Bannatyne's categories were influenced

by Maxwell (1959) who factor-analysed Wechsler's original standardisation sample. He extracted two orthological factors which he called 'verbal-intellectual' and 'spacial performance'. Baumeiser & Bartlett (1962a & 1962b) conducted further factor-analysis and isolated three factors on Wechsler's sample, but on a sample of retarded children they found four factors. These they described as:-

General Factor;
 Verbal Factor;
 Performance Factor;
 Distractability or Memory Factor.

Bannatyne's work seemed to find support in the study by Bortner & Birch (1969) who identified 'verbal', 'spatial-performance' and 'distractability' or 'memory' factors which loaded highly with Bannatyne's categories.

In his major work (Bannatyne 1971), he advocates grouping scales scores into four groups, each containing three tests, where the scaled scores could be expected to total 30 points.

Spatial Ability	(PC,BD,OA)
Conceptualising Ability	(C,S,V)
Sequencing Ability	(DS,PA,Co) - post 1974 (DS,A,Co)
Acquired Knowledge Score	(I,A,V)

Rugel (1974) reviewed 25 studies, and using Bannatyne's categories ranked the scores showing that the highest scores are in the Spatial category, intermediate scores in the Conceptual category and the lowest scores in the Sequential category. A further analysis showed that on the Picture Arrangement sub-test the scores of disabled readers were not significantly lower than the scores of normal readers. There was, however, evidence to show that on the test of Arithmetic the disabled readers' scores were significantly lower than the control groups' scores. In 1974, Bannatyne

suggested re-categorising the WISC, and replacing the Picture Arrangement test in the Sequencing category with the Arithmetic test (Bannatyne 1974). This final form is now generally used (Bajek 1980), although the Acquired Knowledge score is often omitted, thus providing a comparison very similar to Kaufmann's categories.

Some recent studies have not found support for Bannatyne's model. Thompson (1981) failed to produce the expected relationship between the three Bannatyne categories and Vance & Singer (1979) failed to find a significance between the group means. Studies with minority groups who have learning differences produce different patterns (Gutkin 1979, Miller et al 1978) or could not be detected (Sprenen 1981, Clarizo & Bernard 1981, Groff & Hubble 1981, Henry & Whittman 1981). Other writers point out that although there are mean differences between categories for groups, the proportion of individuals in the group displaying that characteristic pattern is quite small (Gutkin 1979), Clarizo & Bernard 1981).

Mosley (1980) also makes use of three groupings drawn from earlier studies (Gault 1954, Belmont & Birch 1966, Cropley 1969, Rugel 1974). Doebling (1968) conducted a study which indicated that most difficulty was experienced on tasks involving rapid sequential processing of symbols. Mosley suggested that the strong link between development of reading and spelling skills in backward readers is linked with general sequential processing skills. Such skills are measured by the WISC tests of Arithmetic, Coding and Digit Span. This 'third factor' as Kaufmann (1969) labelled it, is present in all four methods of grouping the WISC scores. This may be linked in some way to neurological factors; Ackermann et al (1977) suggest:-

"The LD child is at his worst when he must reproduce exactly - and with reasonable speed - sequences of letters, words and numerical manipulations. In short, the sort of abilities that are associated with the normal left hemisphere functioning are most affected (Sperry 1975). The more global, concrete information processing carried on in the right hemisphere generally proceeds normally (Guyer & Griedman 1975)."

Mosely's categories consist of:-

(V) Verbal sub-tests	(C,S,V)
(S) Spatial sub-tests	(PC,BD,OA)
(N) Numerical sequencing sub-tests	(A,DS,Co)

Under this system the sub-test scores are totalled and by using the table provided (P45) converted to a standardised score which can be adjusted for sex differences on the coding test. The significance of any difference can then be calculated by reference to a table (P46) providing percentile points for all levels of difference. The advantage of this approach is that it provides an accurate measure as to the level of significance for any discrepancy between the re-categorised groups. Mosely concludes with the caution that this approach "does allow us to identify children whose attentional and learning problems are not specific to reading alone". Mosely does make several valuable points:-

"The fact that it is possible to have severe reading difficulties without any other problems in sequential processing argues against the idea that these problems may be the consequence of a failure to read."

That this method does not enable us to establish the cause of a learning difficulty, since a further group of children have no marked discrepancies at all, "but it does enable us to identify a group of children whose attentional and learning problems are not specific to reading alone, but extend to other types of tasks involving association learning". As with other forms of categorisation it is not known whether

this form of profile leads to specific implications for remediation.

Kaufmann. Using a factor-analytic study of children between 6½ and 16½, Kaufmann (1975) identified three factors within the WISC-R. This new approach (Kaufmann 1976) produced three factors very similar to the three main categories in Bannatyne's work. The categories vary not so much in name, but by virtue of the fact that they use all the test scores but only once. They are:-

Verbal Comprehension	(I,S,V,C)
Perceptual Organisation	(PC,PA,BD,OA)
Freedom from Distractability	(A,DS,Co)

In Kaufmann (1975), analysis of the standardisation data included discreet samples of blacks and whites, male and female.

"The results of three different methods of factor analysis for each group yielded the proceeding pattern with striking consistency, thereby reinforcing the robustness and meaningfulness of the three factors."

Kaufmann (1979)

Cross validation of these findings were later achieved by Reschley (1978), Shiek & Miller (1978), Van Hagen & Kaufmann (1975), Lombard & Riedel (1978), Stedman, Lawlis et al (1978), and Swerdliks & Schweitzer (1978).

Kaufmann's recent book (1979) is valuable since it provides an excellent guide to using and interpreting the WISC-R. In this he provides guide lines as to significant levels and clinical examples. In what amounts to a step by step guide to interpreting the test results he advocates calculating:-

1. Full Scale IQ (advocating confidence level ± 5)
2. Verbal Scale IQ (confidence level ± 6)
3. Performance Scale IQ (confidence level ± 8)

4. Comparison Verbal and Performance Scale Scores (advocating confidence level ± 12)
5. Fluctuations within scales:
 - a) calculate mean score on that scale;
 - b) indicate significant deviations from mean by 3 points or more;
 - c) mark deviations as 's' strength or 'w' weakness.
6. Interpret significant differences on individual tests.
7. Re-categorise into three groups using the 'Third Factor' (see Sobtka & Black 1978).
8. Clinical interpretation of sub-test fluctuation.

This approach to interpreting IQ scores was found to be valuable, especially regarding deviations between individual scores and the 'third factor'. Inferences about this 'third factor' should be made in conjunction with observation of behaviour during the test of reports. Low score may be associated with distractibility, a deficient short-term memory, inability to concentrate, anxiety, or sequencing skill. The fact that this factor has been identified by the vast majority of studies led Kaufmann (1981) to suggest that the Freedom from Distractibility factor may 'hold the key to competent learning disability assessment'. At least one writer has warned that:

"the examiner should not overlook the possibility that low third factor scores reflect both anxiety and poor numerical ability, since they logically may be related for many subjects."

Lutey (1977).

Analysis of WISC scores from psychological reports on pupils attending a residential Summer school. Following the publication of the Warnock Report (1978) in which closer co-operation between voluntary bodies and local educational authorities was advocated, the London Dyslexia Association approached the Inner London Authority with proposals regarding a residential Summer school. This unique venture accepts

young people with specific language learning difficulties between the ages of 8 and 16 years. As a result there is a considerable difference between the psychological reports which accompany most applications. The reports originate from private, educational, hospital and local authorities from many geographical areas. An analysis of these reports revealed that when an IQ score was calculated, the majority involved the use of the WISC (over 90%). An equal number of reports originated from LEA's and 'private' centres. The total number of reports was 127, although some had to be discounted since they were merely statements to the effect that an individual had been assessed as having a specific language learning difficulty. Of those reports using the WISC-R, an analysis was undertaken where details were provided of scores on individual tests. In Table 57 the mean scores have been calculated for each year, and for the total population. These have also been re-categorised according to Kaufmann's factor groupings (Kaufmann 1965) and in the ACID cluster (Swartz 1974). An interesting variation in these figures is the higher Information test score in 1982; this group were different from others in only one respect, the mean age for 1982 was 16.2 years, and for all other groups the mean age fell between 10 and 11 years.

Table 57.

Analysis of WISC scores achieved by
Summer School students.

WISC Sub-scale Scores and Re-categorisation

WISC - Mean Scores on Individual Tests

Year	I.	S.	A.	V.	C.	DS.	PC.	PA.	BD.	OA.	Co.
1979	8.6	12.6	9.2	11.5	12.7	7.0	13.0	10.6	12.0	13.7	7.7
1980	9.5	14.1	10.0	13.2	14.1	8.1	12.6	12.0	12.9	13.0	6.9
1981	9.6	11.2	9.4	10.0	11.2	6.9	10.3	10.5	12.2	11.6	8.1
1982	12.3	11.6	9.0	11.6	13.0	8.2	12.0	12.0	12.0	16.0	6.2
1983	7.3	12.5	8.1	11.3	11.9	7.9	11.3	10.7	12.2	12.7	7.9
Mean	9.4	12.4	9.1	11.5	12.5	7.6	11.8	12.3	12.2	13.4	7.3

I = Information; S = Similarities; A = Arithmetic; V = Vocabulary; C = Comprehension;
 DS = Digit Span; PC = Picture Completion; PA = Picture Arrangement; BD = Block Design;
 OA = Object Assembly; Co = Coding.

Re-categorisation (Kaufmann 1975)

Year	VC.	PO.	FD.	ACID
1979	11.3	12.3	7.9	8.2
1980	12.7	12.6	8.3	8.6
1981	10.5	11.5	8.1	8.5
1982	12.1	13.0	7.8	10.0
1983	10.7	11.7	7.9	7.8

VC = Verbal Comprehension (I,S,V,C)
 PO = Perceptual Organisation (CP,PA,BD,OA)
 FD = Freedom from Distractibility (A,DS,Co)

Re-categorisation of the Wechsler Adult Intelligence Scale Scores

There have been comparatively few studies concerned with the re-categorisation of the Wechsler Adult Intelligence Scale.

In the early study, Cohen (1957) found poor readers did less well on subjects reflecting attention, fluency, concentration and freedom from distractibility. McDonald (1964) reported on a study of 60 disabled readers between 16 and 19 years of age. An analysis of their sub-scale scores indicated that they were significantly lower on the 'ACID' profile of Information, Arithmetic, Digit Span and Coding (Digit Symbol).

In Britain and America there has been a move within recent educational thinking which resulted in legislation, towards a wider description of children who fail to learn (Warnock Report 1978, 1981 Education Act, USA Federal Law P194-142, Education for All Handicapped Children Act 1975). Studies of the long term effects of specific learning difficulties have been reported under the heading of follow-up studies elsewhere in this thesis. Such studies heightened awareness of the long term effects, resulting in attempts to make provision in tertiary education for young adults with learning difficulties, initially by relaxing admission criteria, and more recently the provision of special courses. It has also become apparent that despite the vast body of research into the profile characteristics of children, comparatively little is known about the cognitive profiles of adults, (Kuipers & Weggelaar 1977). Whether dyslexia can be identified on the basis of these profiles was investigated by writers such as Dudek & Lester (1966) who suggest that such cognitive patterns continue into adolescence and adult life. In the introduction to their 1981 study, Cordoni et al drew attention to the need to establish the cognitive strengths and weaknesses of students with specific learning difficulties

for the purposes of educational planning (Cordoni 1979, 1980 & 1981). In their 1981 studies of 57 students whose ages ranged from 17 to 25 years, their findings confirmed the earlier findings for LD children on the WISC (Bannatyne 1968, Vance & Singer 1979) and extended those findings to young adults. Using both Bannatyne's factors and the ACID sub-test, there were significantly lower scores on the ACID pattern and Bannatyne's sequential factor, although the Arithmetic subject did not discriminate between the LD student and the control group, but the tests of Information, Digit Span and Coding (Digit Symbol) were highly significant. Two two groups were differentiated by both the ACID and Bannatyne categories, with 84% of subjects being correctly classified as to group membership on the basis of this discriminant function.

Frauenheim's (1978) shortened version of his PhD thesis (reviewed in the Follow-up Chapter) showed evidence of significantly lower scores on the ACID profile. From this study of 40 young adults with a mean age of 20 years, eleven subjects were selected as the basis for their more recent study (Frauenheim & Heckerl, 1983). The mean age was 27 years, and included details of both family backgrounds and educational histories, which had involved special remedial help. Scores on the WAIS-R showed a pattern of significantly higher scores on the Performance scale as compared with the Verbal Scale, which had previously been noted on the WISC. All scores remained essentially the same after almost seventeen years. Frauenheim & Heckerl then subjected their data to analysis, using the re-categorisations suggested by Kaufmann (1976), by Bannatyne (1974) and the ACID profile. All three forms of analysis reflected weakness on the tests .

on Information, Digit Span, Arithmetic and Digit Symbol/
Coding, which remained constant over a period of time.

Scores on achievement testing found:-

"Relatively little progress or change in basic academic scales has occurred over a seventeen year period, despite some attempts at specific remediation. Moreover, skill deficits and/or errors made during test performance were similar to those evidenced at the time of diagnosis. The skill limitations seem to reflect specific difficulties with symbolisation processes and skills including visual and auditory memory for symbols, auditory and visual association and integration abilities and, to some extent, sequencing and directional confusions."

There were no visual or auditory discrimination problems but as in other studies, spelling remained the most severely impaired area of academic function. These conclusions seem to be supported by Vellutino's (1978) conclusions, when he stated:-

"It is our conclusion that children who call 'b' 'd', or 'was' 'saw', do not literally see these configurations differently than normal readers, but, because of one or more difficulties in verbal processing, cannot remember which verbal label is associated with which printed symbol."

The analysis of WAIS scores in the present study

The Wechsler Adult Intelligence Scale was used to assess all 30 subjects in the present study. Analysis of the sub-test scores indicates the most significant differences are that the scores on the tests of Digit Span and Digit Symbol (Coding) are lower and at a highly significant level, showing that this could not have happened by chance. The scores on the test of Arithmetic are below the mean scale score, but do not differ to a significant degree. In all cases the scores on the test of Information were equal or above the mean scale score.

This study finds support in McDonald (1964), Cordoni et al (1981) and Frauenheim & Heckerl (1983) for the fact that the Comprehension score is the highest score in the Verbal scale. In this study it was substantially higher than the mean score, and above other 'verbal' type sub-tests. The levels of probability that these differences between tests would be found are set out in the following table.

In the analysis of sub-test scores, the findings support the majority of previous studies in showing that the sequencing/freedom from distractibility or ACID profile is present in the scores of this population. Other studies have shown that such a pattern can accurately distinguish between adults with specific learning difficulties and a control group (Cordoni et al 1981). In this study it would appear that the main part of this difference is due to the significantly lower scores on the tests of Digit Span and Digit Symbol. When the sub-test scores were compared with the scale means in Cordoni et al (1981) and Frauenheim et al (1983), the patterns were found to be very similar to those in this study. In only one respect is there any major

difference between these earlier studies and the present study which does not support the findings suggesting lower scores on the test of Information. In this study all groups achieved a score above their mean score, whereas in the other WAIS studies the Information score fell below the mean scale score. This seems to be the reason why the ACID profile is not as discriminating as the sequencing or 'Freedom from Distractibility' factor, and for older adults would not seem to be a less reliable distinguishing factor.

Table 58

ALL SUBJECTS

The Mean, Standard Deviations and Standard Errors of WAIS Scores

	\bar{x}	S.D.	S.E.	Test Comparison with Scale \bar{x}	
Information	12.7	2.78	.507		
Comprehension	14.8	2.93	.535	.02	Sig.Higher
Arithmetic	10.56	3.03	.554		
Similarities	12.6	2.20	.402		
Vocabulary	12.7	2.44	.447		
Digit Span	7.3	2.40	.439	.01	Sig.Lower
Verbal Scale \bar{x}	11.77	2.57	1.04		
Picture Completion	11.96	2.78	.508		
Picture Arrangement	10.6	2.62	.478		
Block Design	12.06	3.08	.563		
Object Assembly	11.13	2.62	.478		
Digit Symbol/Coding	8.7	2.16	.35	.03	Sig.Lower
Performance Scale \bar{x}	10.89	1.36	.610		

Table 59

WAIS Sub-test Re-categorised Groupings (All Subjects)

	Sub-Test Category/Cluster	Mean Scaled Scores
Bannatyne	Verbal Conceptualisation (S,V,C)	13.38
	Acquired Knowledge (I,A,V)	11.98
	Spatial (PO,OA,BD)	11.71
	Sequencing (A,DS,DS/Co)	8.85
Kaufmann	Verbal Comprehension (I,S,V,C)	13.21
	Perceptual Organisation (PC,PA,BD,OA)	11.43
	Freedom from Distractability (A,DS,Co)	8.85
ACID	(A,Co,I,DS)	9.81

Table 60

ANALYSIS OF WAIS SUB-SCALE SCORES

a)

ANALYSIS OF VERBAL SCALE SCORESAnalysis of Variance

N=30

Source of Variance	Sum of Squares (ss)	Degrees of Freedom (df)	Variance	F-ratio
Between Groups	1004.89	5	200.97	28.55
Within Groups	1224.49	174	7.037	
Total	2229.39	179	12.45	

P < .01

b) 'T' Test Measure of ProbabilityVERBAL SCALE

Information 1					
Similarities 2	.14				
Arithmetic 3	x 3.03	x 2.96			
Vocabulary 4	.04	.19	x 3.16		
Comprehension 5	x 3.16	x 3.30	xx 6.27	x 3.11	
Digit Span 6	xx 7.88	xx 7.73	xx 4.76	xx 7.93	xx 11.04
	1	2	3	4	5

x = < .05

xx = < .01

c) Analysis of Performance Scale ScoresAnalysis of Variance

N=30

Source of Variance	Sum of Squares (ss)	Degrees of Freedom (df)	Variance	F-ratio
Between Groups	224.49	4	56.123	7.85
Within Groups	1035.8	145	7.143	
Total	1260.29	149	8.45	

P < .01

d) 'T' Test Measure of ProbabilityPERFORMANCE SCALE

Picture Completion 7					
Picture Arrangement 8	1.98				
Block Design 9	0.44	2.12			
Object Assembly 10	1.20	.77	1.35		
Digit Symbol Coding 11	xx 4.73	x 2.85	xx 4.87	xx 3.52	
	7	8	9	10	11

x = < .05

xx = < .01

Table 61

Mean and Standard Deviations of WAIS Scores -
Different Groups

	Further Education		Higher Education		Open University	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Information	10.6	2.7	13.1	2.76	14.1	1.07
Comprehension	13.4	3.09	15.3	2.66	15.9	2.86
Arithmetic	9.1	2.28	10.2	3.29	12.4	2.71
Similarities	11.4	2.06	12.9	2.04	13.5	2.17
Vocabulary	10.9	2.13	12.9	1.72	14.4	2.22
Digit Span	5.8	1.93	8.1	1.72	8.0	2.86
Verbal Scale Mean	10.2	2.3	12.0	2.3	13.1	2.5
Picture Completion	10.6	2.17	12.6	3.1	12.7	2.66
Picture Arrangement	10.5	2.22	9.2	2.3	11.1	3.57
Block Design	11.0	3.29	12.7	3.40	12.5	2.50
Object Assembly	9.4	2.87	11.9	2.51	12.1	2.59
Digit Symbol Coding	7.9	2.13	9.6	2.3	8.6	1.59
Performance Scale Mean	9.8	2.4	11.2	2.7	11.4	2.3

An Example of the Analysis of WAIS Test Results

Set out below is an example of the clinical analysis of subtests results, achieved by a subject in this research. It is indicative of the general findings, and illustrates the approach advocated by Kaufmann (1979).

Full Scale IQ = 122

Verbal Scale = 122

Information	18 -s
Comprehension	17 -s
Arithmetic	9 -w
Similarities	14 $\bar{x}=14$
Vocabulary	19 -s
Digit Span	7 -w

Performance Scale = 116

Picture Completion	16 -s
Picture Arrangement	14
Block Design	11 $\bar{x}=13$
Object Assembly	16 -s
Digit Symbol/Coding	10 -w

Full Scale = Superior Ability (Upper 10%)

Verbal Scale = Superior Ability (Upper 10%)

Performance Scale = Above Average Ability (Upper 25%)

Difference between Verbal and Performance Scales = 6 points.

Significantly lower scores on tests of:-

Arithmetic, Digit Span and Digit Symbol.

Significantly higher scores on tests of:-

Information, Comprehension, Vocabulary, Picture Completion and Object Assembly.

Further Analysis' (Kaufmann 1979)

\bar{x} Scaled Score

Verbal Comprehension (I,S,V,C)	17.0
Perceptual Organisation (PC,PA,BD,OA)	14.25
Freedom from Distractibility (A,DS,DS/Co)	8.6

Analysis of Scores Achieved on the Wechsler Adult Intelligence Scale

Each subject was assessed using the WAIS. All the subjects in the Verbal and Performance Scales were administered. The scores for each scale as well as the total or Full Scale were then calculated using the WAIS Handbook (Wechsler 1955).

All Groups

The results for all three groups were:-

TABLE 62

Mean Full Scale Score	110.46
Mean Verbal Scale Score	111.56
Mean Performance Scale Score	107.90

Differences between the three scores are not significant.

The Full and Verbal Scale scores are just above the score of 109, and would therefore be described as being within the Above Average Range (109 - 120). The Performance Scale score is slightly lower, and falls within the upper part of the Average Ability Range (90 - 109), which 50% of the population might be expected to achieve.

Further analysis of all subjects' scores in Table Wechsler (1955) reveals the relationship between the Performance, Verbal and Full Scale scores. Since the Full Scale score is calculated on the basis of the Performance and Verbal Scales, a correlation was expected. It should be noted that despite their specific difficulties and differences with the sub-tests, these subjects achieved correlations significant at the .01 level. The lower level of correlation scores on the Performance Scale compared with the Full Scale score was not significant, and does not support the hypothesis that dyslexic students will be weaker on verbal type tasks, but perform better on spatial and perceptual type tasks. The correlation

between the Verbal and Performance Scale scores was also low, and is seen as supporting the view that these scales are testing different abilities.

Further Education

The WAIS scores for this group of subjects were as follows:-

TABLE 63

	\bar{x}	S.D.
Full Scale Scores	101.0	9.0
Verbal Scale Scores	101.7	10.5
Performance Scale Scores	100.0	13.5
(4 female and 6 male subjects. Mean age 27.8 years)		

In 5 cases the Performance Scale Scores were higher than the Verbal Scale scores, in the other 5 cases the position was reversed.

TABLE 64

	Lowest	Highest	Median	Range
Full Scale Scores	83	113	100	30
Verbal Scale Scores	87	118	103.5	31
Performance Scale Scores	74	118	103.5	44

Higher Education

The WAIS scores for this group were:-

TABLE 65

	\bar{x}	S.D.
Full Scale Scores	112.0	6.8
Verbal Scale Scores	113.3	7.9
Performance Scale Scores	109.7	10.2
(2 female and 8 male subjects. Mean age 28.6 years)		

5 subjects had higher and 5 subjects had lower Performance Scale scores as compared with Verbal Scale scores.

TABLE 66

	Lowest	Highest	Median	Range
Full Scale Scores	105	126	109.5	21
Verbal Scale Scores	100	125	113.5	25
Performance Scale Scores	94	124	113.0	30

Open University

For this group the scores were:-

TABLE 67

	\bar{x}	S.D.
Full Scale Scores	118.4	4.4
Verbal Scale Scores	119.7	6.7
Performance Scale Scores	114.2	8.6

(3 female subjects, 7 male subjects. Mean age 40.1 years)

In 6 cases the Verbal Scale score was higher than the Performance Scale score, in 3 cases the Performance Scale was higher, and in one case the sub-scale scores were identical.

TABLE 68

	Lowest	Highest	Median	Range
Full Scale Scores	111	125	118	14
Verbal Scale Scores	108	132	120	24
Performance Scale Scores	102	125	114	23

Age Range

Mean age of all subjects:- 32.16 years; S.D. 10.81

Range 21 - 58 years. Span of 37 years.

Median 29.5 years.

Correlation between age and Full Scale IQ:- $P < .05$.

Statistical Comparisons between the Full, Verbal and Performance Scale Scores of All Three Groups

Two forms of statistical analysis were performed and results are set out in Tables 70 & 71. (p299), Table 72 (p299) and Table 73 (p301).

Table 73 indicates the levels of correlation as calculated using the Spearman's Correlation Coefficients. It is worth noting that the only significant levels of correlation were between the Full Scale score and constituent scales, in each group were between the Full Scale and Verbal Scale. Performance Scale scores did not correlate significantly with either Verbal or Full Scale scores.

Difference between group mean scores.

Table 69 indicates the levels of significance between groups and the scale scores using a T test. Summarised, these figures reveal that all three groups are significantly different from each other in terms of the Full Scale scores. For comparison, the scores from each scale are set out overleaf.

TABLE 69

	Further Education	Higher Education	Open University
Full Scale	101.0	112.0	118.4
Verbal Scale	101.7	113.3	119.7
Performance Scale	100.0	109.7	114.2
\bar{x} Age =	27.8	28.6	40.1

Full Scale scores correlate significantly with increasing age $P < .05$.

LEVELS OF SIGNIFICANCE AND CORRELATIONS

Based upon comparison of the mean IQ scores of all three groups on Full Scale, Verbal Scale and Performance Scale Measures.

Table 70

Total of Scores Achieved by All Three Groups

Full Scale			
Verbal Scale	.76		
Performance Scale	.60	.27	
	FS	VS	PS

Table 71

Total of Scores Achieved by All Three Groups

Full Scale			
Verbal Scale	** 83		
Performance Scale	** 66	25	
	FS	VS	PS

Decimal Points
Omitted

** = P < .01

LEVEL OF SIGNIFICANCE CALCULATED
USING A 'T' TEST

LEVEL OF SIGNIFICANCE CALCULATED
USING SPEARMAN'S CORRELATION
COEFFICIENTS

LEVELS OF SIGNIFICANCE

Level of Significance
calculated using a 'T' Test

300

CORRELATION COEFFICIENTS

Correlation Coefficients calculated using the Spearman's Coefficients.

Correlation Coefficients calculated using the Spearman's Coefficients.									
Further Education	) Full Scale								
	) Verbal Scale	*.73							
	) Performance Scale	45	-14						
	) Full Scale	08	-22	46					
Higher Education	) Verbal Scale	27	-37	29	*.69				
	) Performance Scale	52	14	51	*.67	17			
	) Full Scale	17	62	-36	09	25	-01		
	) Verbal Scale	04	25	-13	06	43	-03	*.79	
Open University	) Performance Scale	06	58	-51	00	-11	01	49	-08

$$\star = \bigwedge_{i=1}^n \star_i$$

Summary

The analysis of scores achieved on the Wechsler Adult Intelligence Scale provides support for the view that specific learning difficulties are constitutional in origin. Patterns identified within the sub-scale scores are seen as supporting earlier studies which found particularly low scores on tests of short term auditory and visual memory skill, together with problems with mental arithmetic.

A positive and significant correlation was found between the Verbal Scale scores and the Full Scale scores. This was not the case with Performance Scale scores.

There were significant differences between the scores achieved by the three populations in this study ($P .05$). The Full Scale scores were also found to correlate significantly with age ($P .05$). Although all groups had similar patterns within the distribution of the sub-scale scores, there were significant differences between the Full Scale scores, which in turn were associated with increasing age.

TABLE 74

	\bar{x} IQ	Age
Further Education	101.0	27.8 years
Higher Education	112.0	28.6 years
Open University	118.4	40.1 years

The collection of data by questionnaire enabled a wide range of areas to be covered. In the 'clinical' sphere the questions owe a lot to the influence of lists of signs often associated with dyslexia. The answers suggest that such lists may be more relevant to children than to adults. The factors upon which important differences were found were lateness in learning to read, and a family history of language learning difficulties.

Overall, 33% of subjects reported late development, most frequently in speech. Factors relating to the number of schools attended and for how long did not reveal any significant differences. Most subjects realised that they had difficulties by the age of 9 years and reported feelings of inferiority or inadequacy, which were reinforced by poor school reports. The majority of subjects did not pass academic exams before leaving school, and this correlated significantly with the fact that written language was a major influence on vocational choice. Approximately two out of three subjects chose jobs because they did not involve written language, while over 90% reported that written language difficulties influenced their choice of jobs and a career. When interviewed, only 16% of subjects had jobs which involved regular reading. This was reflected in their leisure interests, where their dyslexic-type difficulties redispoused them towards live performances rather than reading or involvement in social situations where reading or writing might be required.

Most subjects had a low level of self-esteem upon leaving school, but this does not seem to be related directly to secondary effects. A positive self-image and the support of significant others were reported by the majority by the time they were interviewed. This was a more positive situation than might have been expected from the large number who reported being prevented from taking social roles or learning specific skills because of their difficulties. Language performance was found to vary dramatically without apparent reason, although most subjects did not drink alcohol, some reporting that they feared alcohol might further reduce their hard-won skills.

Subjects were aware of the influence of their language difficulties, and reported that exams and when being observed posed many problems. This had in turn influenced their choice of college and course, as well as the adoption of learning strategies which they had found helpful. Their major difficulties were still associated with written work, which they tried to compensate for by using notes and diagrams. Only one in three received concessions, the majority continued to try and hide their difficulties.

These difficulties continued despite having mastered the skill of silent reading to an adult level of some 150 wpm. Subjects reported that their main problems were associated with spelling, and this proved to be the case on a standardised spelling test. The mean scores on the Wechsler Adult Intelligence Scale were in the Average and Above Average ability ranges. Intelligence Quotient scores were found to correlate significantly with age, and revealed significant differences (in ascending order) from Further Education to Higher Education and the Open University. Evidence was found of differences between the sub-scale scores which have been found to be significantly associated with dyslexia type difficulties in other studies.

From the results obtained from this study, it would seem that adults with specific learning difficulties might be most accurately identified on the basis of their spelling abilities and WAIS profile. Many factors thought to be indicative in children were not found to be characteristic of the present adult population. Whereas the variability in written language skills and virtual abstinence from alcohol were highly indicative, it is not clear whether the correlation between increasing

age and intelligence is due to the weighting of the test used, or whether the comparatively small sample from the Open University reflects the fact that only the more intelligent adult returns to formal education later in life.

CHAPTER 9

PERSONALITY PATTERNS AMONG ADULT STUDENTS

PERSONALITY PATTERNS AMONG ADULT STUDENTS

"The learning of any subject must be viewed in terms of the total personality of the learner. Impressive confirmation of this point is contained in studies of reading difficulties."

McClusky 1949.

Background

The importance of personality in relation to language learning difficulties has long been appreciated and often alluded to. In her comprehensive review of the literature, Cordoni (1976) found that:-

"It was unusual to discover one (authority) who did not mention emotional difficulties as an associated finding in children with learning disabilities."

In one of his earlier papers Orton (1929) made reference to what has now become known as 'secondary factors':-

"A thorough study of the attitudes and defences which have been engendered by his difficulties is often of as great a value as the actual technical retraining."

Many references relate to emotional adjustment. Emotional disorders associated with reading difficulties are mentioned in earlier reports by Karlan (1934), Monroe (1935), Gates (1941), Fernald (1943), Sylvester & Kunst (1943), Blanchard (1946), Eisenberg (1975) and Bender (1975). Gann(1945) seems to have been one of the first researchers to have related 'retarded reading' to a broader problem than emotional difficulties. She suggested that these should be considered as 'personality problems' and based her research on the Roschach Test and Pinter's 'Aspect of Personality' Test. These findings influenced Witty (1950), who concluded that "personality factors appear to be of utmost importance

in the case of success or failure in reading". Thus the interaction between reading difficulty and personality seems to have been recognised since before World War II; although it was not until 1962 that Rabinovitch included formal recognition and categorised the relationship. From his studies he believed it was possible to identify three groups, those with:-

1. Primary Reading Retardation whose cause was biological or endogenous.
2. Secondary Reading Retardation where a normal reading potential has been impaired by factors such as anxiety, depression or emotional blocking.
3. Brain injury with reading retardation where the case history reveals causes of brain injury such as birth trauma, pre-natal toxicity and head injury.

Later, Rabinovitch (1968) elaborated upon this classification, suggesting that the third category could be seen as a variant of Secondary Retardation. Boder (1971) has suggested that "within each field, many professions make the diagnosis of specific dyslexia reluctantly ... an important reason for this reluctance is that the emotional disorder characteristic of the dyslexic child tends to be interpreted as the primary cause of this inability to read rather than as secondary and reactive to it."

Manser (1974) described eight items of similarity between learning disability and juvenile delinquency including negative self-concept, low frustration tolerance, 4 to 1 male to female ratio, problems in directional orientation and school difficulties beginning in the primary grades. Berman (1974) believes that learning difficulties are often a precursor of delinquency:- "L.D. in early childhood forms the basis of an insidious type of life-style that inexorably seems to lead towards delinquency". Such views

seem to have been based upon retrospective studies, i.e. Compton (1974). Not all studies have reached these conclusions:- Foster (1972) did not find a link in her follow-up study; Vierkunen et al (1976), Berman & Siegel (1976) and Spreen (1981) also produced results which do not support a causal connection between specific learning difficulties and delinquency.

Howards (1971) favours an environmental or behavioural explanation suggesting that once a person is labelled, he does tend to behave in the fashion expected by those who label him. The contention is similar to the 'self-fulfilling prophecies' described by Rosenthal & Jacobsen (1974) and in Rosenthal's (1973) study of self-esteem. Ruben & Barlow (1971) take an opposing view suggesting that the fault lies with the system rather than the individual:-

"There are serious questions regarding the ability of our present educational system to adequately accommodate the broad range of individual differences found within a typical school population."

Fraunheim (1976) concluded that even as adults, reading difficulties continue to influence social and heterosexual relationships. Peter & Spreen (1979) found that behavioural abnormalities significantly discriminated between neurologically handicapped students and those without neurological signs whose mean age at the time of the follow-up was 19 years. It was also found that learning handicapped subjects showed significantly more deviant behaviour and greater signs of maladjustment than the normal peer group. These results should be seen in the context of subjects having a general learning handicap which may be more closely related to studies indicating that symptoms of brain dysfunction continue and in some cases develop into serious

personality disorders. (Anderson & Plymate 1962, Kaste 1971, Lanfer 1962, Dykman, Peters & Ackerman 1973. Mendelson et al 1971, Quirkin et al 1976). The 'deplorable effect' that reading failure can have on children in a conventional school is illustrated by the study conducted by Preston (1940) contrasting two groups drawn from the same schools in San Francisco. Using measures related to the home situation, social world and school situation, she concluded that emotional problems were secondary to primary reading difficulties:

"Reading failure causes not only a blighting insecurity in the school world which gives rise to serious maladjustments in the personalities of these normal children, but also an embarrassing, belittling insecurity in the social life of these children at school and sometimes in the home, adding to maladjustment which interferes with proper development and constitutes a menace to future social adjustment."

The following quotation from Quadfasel & Goodglass (1968) remains true today, and amply summarises the review of the emotional aspects included in Vernon (1976):-

"There are those who believe that all reading disabilities and other deficits can be accounted for by emotional factors. They can point to the high incidence of emotional problems associated with severe reading disabilities. However, in our culture, it is almost inevitable for a child to develop an emotional disturbance as a result of a severe reading handicap and its effects on his performance, and the reaction of his environment to him. These emotional reactions are, by non-prejudiced observers, considered secondary reactions and not a primary cause."

The present study deals exclusively with subjects who have what Rabinovitch would term 'primary' dyslexia; an indication of the kinds of problems reported as being associated with language learning difficulties can be obtained from earlier reports which don't differentiate between either the 'cause' or 'effect' of reading diffi-

culties. Gates & Bond (1936) suggest the following symptoms may be present:- nervous tension; bold front; retreat reactions; counter-attack; withdrawn reactions; extreme self-consciousness and submission. Schonell (1936) reporting on adults, suggests that there is a general disregard for details, a feeling of inferiority, loss of confidence, apathy, rationalisation on a compensatory basis and emotional instability.

"Emotional factors of apathy, failure, loss of confidence and loss of initiative begin to influence mental attitudes in other scholastic fields, so that finally the pupil is impelled to look for compensatory forms of behaviour which will provide interest and achievement, and at the same time attract the attention of others. Not unnaturally, some of these activities are anti-social."

Schonell (1952) quoted in Hagger (1968).

There are major problems in interpreting many of these studies, since many are based on clinical and/or case studies, others involve psychiatric terminology or betray signs of a pre-conceived theoretical position, and the different psychometric tests used render many studies incompatible. In an attempt to simplify the number of factors thought to be involved, Bell et al (1972) factor-analysed forty-three test variables and found that the one factor relating to reading retardation was an aggressive (negative or passive) attitude. Spielberger (1966) found language problems four times as frequent in a high-anxiety group. Spache (1978) reviewing four earlier studies he had conducted; reported finding Hostility and overt aggressiveness, intolerance and defensiveness. Klasen (1972) suggests "dyslexia never exists as an isolated symptom. It is always accompanied by associated and/or secondary complications" Several of these are discussed by Goldberg &

Schiffman (1972). Other studies which have attempted to identify personality factors which may interfere with learning in adults, have concluded like Hand (1968) that "people learn because learning has personal value for them". Fisher (1969) concluded that there is an interesting relationship between personality and educational problems and that "learning styles seem to be seriously affected by personality".

Many writers have stressed the need for early identification before the child becomes distressed at being unable to learn. (Critchley 1964, de Hirsch et al 1966, Meredith 1972, Rabinovitch & Ingram 1962, Jordan 1972, and Yule & Rutter 1976). Other writers have stressed the correlation (connection. if not cause) between reading difficulties and delinquency (Mulligan 1969, Tarnopol 1970 & 1974, Brody 1972, Hogenson 1974, Wright 1974, Poremba 1975 and Pincus 1979). In Britain, Morris (1966) concluded from her Kent survey:-

"That many poor readers have become withdrawn, depressed, anxious for adult interest and affection, hostile, anxious to gain acceptance and prestige among other children, and generally restless."

Lawson's (1971) findings suggest that using Cattell's Children's Personality Questionnaire supported Morris's (1966) conclusions, with poor readers achieving significantly higher scores on factor 'O' indicating apprehension, worrying depressing and 'guilt prone' tendency. The fact that reading difficulties continue to be an important aspect even in adult life is not surprising (Kline 1978 & 1982). Carter (1964) points out that adults need to read to meet the various needs of daily living, for cultural awareness, as well as current affairs and voca-.

tional reasons. Even when reading for pleasure is excluded, the early studies of Lazarsfield (1940), Dale (1945), Strang (1942) and Waples et al (1940), clearly indicate that reading plays a significant role in solving personal and social problems.

The cognitive approaches used by dyslexic adults was the theme studied by Halitsky (1976) who quotes the stress that Witkin (1965) placed on his view that "cognitive functioning is intimately related to personality. In fact, it is sometimes hard to tell where cognition ends and personality begins."

From these reports it seems that, not only are language learning difficulties a major influence during childhood, but critical during the period of adolescent personality development (Ablewhite 1967). Despite efforts to compensate for their learning difficulties, many adults experience emotional consequences, ranging from anger and frustration, to guilt and low self-esteem, (Brunner & Starkey 1974, Roswell & Natchez 1977, Beare 1975, Schiffman 1966, Scanlon 1977, Klimes 1977 and Saunders 1977). A quotation from Fernald (1943) sums up the often reported relationship between disability and personality:-

"The greatest handicap to the non-reader is the complex which accompanies it."

The majority of researchers would seem to agree with Kurlander & Colondy (1974) that it is important to accurately identify the learning problems, not only to avoid academic failure, but also to avoid psychiatric symptoms.

Choice of a Personality Test

Since the subjects in this study were all adults with

specific learning difficulties, a test was sought which would provide several measurements of personality, but one which could also be administered to subjects with low levels of literacy. In the literature from the United States there are a number of studies reported using the Minnesota Multiphasic Personality Inventory (MMPI), (Chansky & Bergman 1957, Spache 1976, Jones 1972). Using the MMPI, fourteen scores can be obtained from the four hundred items normally administered. In a study by Karson & Pool (1957) they found similarities between Cattell's 16PF and the MMPI, which were interpreted as offering support for the construct validity of the 16PF. The MMPI scales purport to measure Hypochondria, Depression, Hysteria, Psychopathic Deviate, Paranoia and other psychiatric conditions which suggest a deviant pattern rather than a difference within a normal range.

One of the few British reports dealing with personality and dyslexia is by Williams (1974) whose research involved administering the Roschach and Bender Gestalt tests. A summary of the findings suggested that:-

"The research confirms that in certain special respects, dyslexic children can be helpfully classified as a special group. Despite some individual difference, there is a typically dyslexic pattern of responding to Roschach 'House-three-person' and Bender tests. The fact that they have responded in this way to the somewhat unusual stimuli of the test situation appears to be associated with their difficulty in handling more than a limited amount of information in a short time. Their policy is therefore to 'play safe' and keep things simple. In general this appears to have been a remarkably effective way of dealing with the pressures from their environment ... "

Spache (1978) reviewing 32 studies involving Roschach and MMPI tests, concluded that the patterns attributed to

retarded readers are a 'cause' or 'effect' of their difficulty, but was unable to distinguish which.

Choosing a Personality Test

When seeking a personality test for use in this study, which would be both descriptive and comprehensive, the Cattell 'Sixteen Personality Factor Questionnaire' (16PF) seemed to be the most suitable. The main advantages being that it is an instrument developed by a factor-analytic approach, and rooted in replicable, observable and quantifiable data (Cattell 1965). There were three advantages of using the 16PF as compared with the test developed by Eysenck (1967 & 1969). Firstly, that Cattell's terms (Cattell 1973) were not limited to the two main Eysenckian dimensions of Extro-version (E) or Neuroticism (N); secondly, that the 16PF is available in a low literacy version; lastly, a 'second-order analysis' can produce factors similar to those identified by Eysenck. Reviews of the 16PF in Buros' (1972) 'Mental Measurements Yearbook' have often advanced conflicting views. In the Fourth Yearbook (1953), reviews ranged from Lubin's view that its use could be harmful, to Wittenhorn's who felt that it might be valuably used in a variety of personal research undertakings. By the Fifth Yearbook (1959), views seemed to have changed, for Adcock saw the test as a "major development in the personality area", likely to "become the standard questionnaire-type personality test of the future. It provides a comprehensive range of trait scores which should be helpful for occupational guidance and as a background to clinical examination". The author of the review in the Sixth Yearbook (1965) felt it was "the best factor-based personality inventory available", but the Seventh edition

of the Yearbook (1972) carried reviews which differed on the question of validity. The conclusion generally seems to be that it is one of the best, if not the best, personality tests available, and it has the added advantage of having a low level literacy version suited to research use.

The alternative of putting a test on tape was considered, but discounted as being outside the scope of the present research, since it would inevitably have involved questions of standardisation.

The 16PF (Form E) was developed for use with individuals who have low levels of literacy, with the added advantage of providing a complete coverage of personality in a short time. The factors measured are the same as those included in Forms A, B, C and D, and similar to the factors represented at younger age levels by the High School Personality Questionnaire (HSPQ) and the Children's Personality Questionnaire (CPQ). There are eight questions provided for each of the 16 factors in this form of the test, making a total of 128 questions which were scored by hand using a template. The raw scores can then be converted to Sten scores using the Manual, and the individual's 'profile' can then be plotted. Although there are important theoretical differences between Eysenck's work and that of Cattell, it is possible on a pragmatic level, to obtain second-order factors from Cattell's scores which are very similar to Eysenck's Extroversion and Neuroticism scores. In the analysis of the 16PF, these are referred to as Anxiety (equated with Eysenck's Neuroticism), and Exvia which corresponds closely to Eysenck's Extroversion (Cattell et al

1970). The second-order scores are easily calculated on the basis of the tables set out in the Administrator's Manual for the 16PF. The four most commonly used second-order factors are Extroversion, Anxiety, Tough Pose or Cortertia and Independence.

The Independent Assessment and Research Centre provide both training courses in the use of the 16PF, and also offer a computer service giving a comprehensive interpretation of 16PF questionnaires. Based upon the copyright programme developed at the Institute for Personality and Ability Testing (at present directed by A.K. Cattell) the full interpretation includes: sten scores, centile ranks, plotted profile, plus verbal description of the strongest main primary personality characteristics, and an evaluation of second-order factors with derived criteria in the form of a personal career development profile. The IARC did run a restricted analysis of all the results included in this study, and provided a summary of sixteen second-order factors in each case.

TABLE 75

Low and High Score Descriptions on
the 16PF Form E

Factor	Low Score	High Score
A	Reserved	Outgoing
B	Less intelligent	More intelligent
C	Affected by feelings	Emotionally stable
E	Humble	Assertive
F	Sober	Happy-go-lucky
G	Expedient	Conscientious
H	Shy	Venturesome
I	Tough minded	Tender minded
L	Trusting	Suspicious
M	Practical	Imaginative
N	Forthright	Shrewd

TABLE 75 (contd.)

Factor	Low Score	High Score
O	Self-assured	Apprehensive
Q ₁	Conservative	Experimenting
Q ₂	Group Dependent	Self-sufficient
Q ₃	Casual	Controlled
Q ₄	Relaxed	Tense

Searches of the literature were unable to find any reference to Form E of the 16PF having been used in Britain in studies of specific learning difficulties. British reports where the 16PF have been used in an educational situation seem to have been related to investigations of the relationship between extroversion and ability (Ley et al 1966, Entwistel 1972). The measurement of extroversion is a second-order factor in the 16PF, and for this reason "attention has been directed mainly to the data on Eysenckian extroversion, because this seemed clearer than the data on Cattellian extroversion" (Anthony 1973). An attempt was made by Carver (1966) to use the fourteen factors from the High School Personality Questionnaire (HSPQ) in a master's thesis relating 'Left dominance and reading difficulties'. Unfortunately, this aspect was not completed. Two American papers by Bell (1969) and Bell et al (1972) factor analysed the results obtained on the HSPQ administered to 50 caucasian and 50 negro students. These studies revealed three patterns of adjustment to reading difficulties. These were termed:- a) Aggressive; b) Passive; c) Negative; a fourth factor was termed 'the caucasian reader' and related to the fact that caucasians were more tough minded and more retarded in their reading achievement. A note at the end of Bell et al (1972) suggests

that although orally administered, there had been no change in reliability and that "the use of objective instruments seemed to be justified even though the reading level was too high for some of the participants."

The majority of papers deal with the 'conventional' forms of the 16PF or the Children's Personality Questionnaire (Weaver et al 1968, Frost 1965, Bazemore & Gwaltney 1973). In the Manual for Form E, there appears the comment that "a few factors, notably N, M and Q₂, need improvement, and work is now in progress aimed at meeting this need", (Cattell 1976). There has been one recent paper which attempted to assess the item factoring of the 16PF Form E. Burdsal & Bolton (1979) conducted a study of 449 subjects with a mean age of 31 years. In an earlier study Burdsal & Vaughan (1974) had been concerned about factors G and Q₁, but these were substantiated by the 1979 study. Their conclusions were that "the major product of this study was the addition of evidence that tends to substantiate Cattell's primary personality traits. The only factor that has failed to be replicated across studies is N".

Among the limited references to the use of the 16PF with adolescents or adults with language learning difficulties, are two papers presented by Hogenson to the 1978 Orton Society Annual Conference in Minneapolis. These dealt with emotional aspects of learning difficulties and the qualities of personality thought to be necessary for a dyslexic person to be successful in adult life:

"There seems little opportunity in today's society for adult success for a dyslexic who lacks warmth, good intelligence, ego strength, dominance, impulse control, the ability to conform and the necessary boldness. Unfortunately, a learning disability in childhood can lead to school and peer group experiences

which inhibit the development of the qualities
I have identified."

These seven qualities, Hogenson suggests, correspond to

Factors of:-

- A - warmth
- B - intelligence
- C - ego strength
- E - dominance
- F - impulsivity
- G - group conformity
- Q₁ - boldness

In a private communication, Dr. Hogenson (1981) enlarged
this list by including factors:-

- L - trusting
- Q₄ - free-floating anxiety.

Comparison of 16PF Form E Scores

Three forms of comparison were possible with the data
obtained from the 30 subjects in this study:-

- a) a comparison of raw scores with the popula-
tion data provided in the Manual (intergroup
comparison);
- b) an intragroup comparison using sten scores;
- c) an indication of second-order factors present.

An Intergroup Comparison of Raw Scores

Data from all subjects in this study was compared with
the raw score data for males and females upon whom the
test was normed, as given on page 17, Table 7.9, in the
Manual for the 16PF Form E.

TABLE 76

Factor	'Population' mean score	S.D.	This study mean score	S.D.	Probability
A	5.03	1.65	4.16	1.66	.043 *
B	4.52	1.68	7.26	0.944	.001 ***
C	3.93	1.84	3.70	1.64	.617
E	2.33	1.67	4.80	1.82	.001 ***
F	4.07	2.07	4.20	1.73	.787

TABLE 76 (Contd.)

Factor	'Population' mean score	S.D.	This study mean score	S.D.	Probability
G	5.42	1.71	3.60	1.90	.001 ***
H	3.19	1.89	4.43	2.44	.003 *
I	4.36	2.20	5.23	2.09	.118
L	3.09	1.73	3.60	1.58	.237
M	3.39	1.38	4.60	1.42	.001 ***
N	4.25	1.31	3.93	1.22	.665
O	4.65	1.93	4.23	1.88	.598
Q ₁	2.80	1.45	6.63	0.99	.001 ***
Q ₂	3.67	1.94	4.86	1.77	.013 **
Q ₃	4.93	1.68	3.80	1.56	.008 **
Q ₄	3.89	2.11	4.26	1.94	.509

All the above are based on a population of N = 30.

The comparison was made using a 'T' test.

* = $<.05$

** = $<.01$

*** = $<.001$

These results suggest that the mean raw scores achieved by the subjects with specific learning difficulties, differed significantly in several respects from the scores achieved by the population on whom the test was 'normed'. Differences with a probability level of less than .001 were evident on factors B, E, G, M and Q₁.

Differences at a probability level of less than .01 were related to factors Q₂ and Q₃.

Differences at the .05 level were found on factors A and H.

Description of Raw Score Differences

The differences between the population used for standardising the test and the data from this research, can be described in terms of the personality factors measured by the different traits.

Factor A - Subjects in the present study were significantly more reserved, critical or aloof than the standard sample.
= lower than average P = $<.05$

Factor B - subject significantly higher on the more intelligent and abstract thinking continuum, which was not unexpected with a population of students.
= above average P = $<.001$

- Factor E - a measure of assertiveness or competitiveness, here the subjects were also significantly higher on the scale.
= above average P = <.001
- Factor G - results suggest that the present population was less likely to feel obligation, likely to disregard rules and act as expedient.
= lower than average P = <.001
- Factor H - here the subjects were not as shy, they were bolder, more socially adventurous and uninhibited.
= higher than average P = <.05
- Factor M - the higher score here suggests a more imaginative approach, wrapped up in inner urgencies or possibly careless of practical matters.
= higher than average P = <.001
- Factor Q₁ - the most extreme score, suggesting that the subjects in this study tended to experiment, were free-thinking rather liberal in their attitudes and analytical.
= higher than average P = <.001
- Factor Q₂ - a higher score suggesting a resourcefulness, preference for own decisions and self-sufficiency.
= higher than average P = <.01
- Factor Q₃ - a lower than average score indicating more undisciplined, tending to follow own urges, and careless of protocol.
= lower than average P = <.01

An Intragroup Comparison Using Sten Scores

Raw scores are normally converted to Sten scores before plotting on a profile or calculating the second-order factors. The 16PF Form E Manual (Cattell 1976) provides a table of norms by age and sex. These were used to calculate the Sten scores for the present population. All IPTA tests take units of ten for their scale range (referred to as Sten or Standard Ten). The mean of the population is used as the central value, which in this case is 5.5.

"Thus the range normally called 'average', namely one-sigma range centred on the mean, is represented by Stens 5 and 6.

Consequently only when we get to Stens of 4 and 7 should we

think of a person as definitely 'departing from the average'." (Cattell et al 1970). The Sten scores for the three sub-groups within this study, as well as the total sample are set out in the following table.

Three sets of calculations were then carried out, and are included in Table 77.

- a) the level of significance for each factor was calculated in comparison with mean range of 5 - 6.
- b) the difference between the mean scores for all groups (the total) was compared with the mean range; and levels of significance calculated for the difference.
- c) the degree of significance for the differences between groups was calculated. These only affect Factors G, H, I and N and are summarised after the table.

Conversion from raw scores to sten scores resulted in two factors becoming less significantly different when compared with the 'normal' sten range of 5 - 6. Factors A and Q_2 achieved a significance of less than .05, and could therefore have been achieved by chance. The other factors, B, E, G, H, M, Q_1 and Q_3 remain significant at or above the .05 level.

In a comparison of the mean scores achieved by each sub-group, it was found that on Factors G, H, I and N, there were significant differences between groups. On Factor G, where low scores are suggestive of expediency and high scores suggestive of conscientiousness, the Further Education group were significantly higher than either of the other two groups. This suggests that subjects in Further Education are more conscientious than those in Higher Education or the Open University, who tend towards the expedient end of the continuum.

In the case of Factor H, the Further Education group differed significantly from those in the Open University. The Open University students being more venturesome and socially bold, with a score significantly above the mean and above the scores achieved by the other two groups in this study.

On Factor I, the Further Education group differed from the Higher Education group at a level that could not be accounted for by chance. Whereas those in Further Education were in the middle of the mean range, those in Higher Education were significantly closer to the tender-minded or sensitive end of the range.

Factor N revealed a significant difference between the Further Education subjects and those from the Open University. Neither were significantly different from the mean range, but since the Open University students' scores were on the 'forthright and unpretentious' side, and the Further Education students were on the 'shrewd and calculating' side, there was a significant difference between the two groups.

On Factors A, reserved to outgoing, and Q_2 , group-dependent to self-sufficient, there were significant differences between the raw scores of subjects in this study and the standardised population, but these ceased to be significant when converted to sten scores.

A comparison between sub-groups indicated that the students in Further Education achieved higher scores in terms of 'conscientiousness' than did either of the other groups. Further Education students proved to be less venturesome or socially-bold as compared with Open University students. On Factor I, measuring tough or tender-mindedness, the Further Education .

students were close to the mean, whereas the students in Higher Education were more sensitive. On Factor N, the only difference was between the Further Education students and those in the Open University who had scores either side of the mean, but significantly different from each other.

Table 77

STEN SCORES 16PF 'E'

TABLE

SUBJECT 16PF FACTORS	FURTHER EDUCATION		Difference from mean range 5-6	HIGHER EDUCATION		Difference from mean range 5-6	OPEN UNIVERSITY		Difference from mean range 5-6	TOTAL ALL SUBJECTS		Difference from mean range 5-6
	M	SD.		M	SD.		M	SD.		M	SD.	
A	4.0	2.3		5.3	1.8		5.1	1.9		4.8	2.0	
B	9.0	1.3	.001	9.2	1.2	.001	9.4	0.8	.001	9.2	1.1	.001
C	5.7	2.4		4.8	1.8		5.2	1.8		5.2	2.0	
E	8.2	1.4	.001	9.1	1.5	.001	8.5	2.0	.001	8.6	1.6	.001
F	7.0	1.4		6.0	1.8		5.6	1.7		6.2	1.6	
G	4.9	1.8		3.1	1.9	.01	2.5	1.4	.001	3.5	1.7	.001
H	5.5	3.1		6.7	2.5		8.5	1.7	.001	6.9	2.4	.05
I	5.6	1.1		7.6	2.2	.05	6.7	2.5		6.6	1.9	
L	6.4	2.0		6.2	2.5		6.6	1.9		6.4	2.1	
M	7.2	1.8		7.9	1.3	.01	7.1	1.7		7.4	1.7	.001
N	6.1	1.4		5.2	1.6		4.3	1.7		5.2	1.5	
O	5.7	2.2		5.6	1.1		4.2	2.1		5.1	1.8	
Q ₁	9.7	0.4	.001	9.9	0.3	.001	9.9	0.3	.001	9.8	0.3	.0001
Q ₂	6.0	1.8		6.3	1.8		6.5	1.9		6.2	1.8	
Q ₃	4.1	1.6		3.9	1.8		4.3	1.7		4.1	1.7	.01
Q ₄	5.8	2.0		5.7	1.5		5.4	1.2		5.6	1.5	

Significant differences between groups exist on:-

Factor G: F.E. differ from H.E. $P < .04$; F.E. differ from O.U. $P < .005$ Factor H: F.E. differ from O.U. $P < .01$; Factor I: F.E. differ from H.E. $P < .01$ Factor N: F.E. differ from O.U. $P < .01$. All other differences not significant, $P < .05$.

Second-Order Factor Analysis

The final analysis was a comparison using second-order factors. These had been calculated by the Independent Assessment and Research Centre, from which the mean scores were then calculated.

TABLE 78

Mean Scores Second-Order Factor Group	F.E.	S.d.	H.E.	S.d.	O.U.	S.d.	\bar{M}
Extraversion	6.01	1.95	6.26	1.89	6.64	1.50	6.30
Anxiety	5.37	2.40	5.39	1.19	4.57	1.33	5.11

The interesting thing to note is that in trying to obtain an arithmetic average from figures which are themselves obtained on the basis of calculations involving 8 and 10 separate scores, the results are not significantly different from each other, nor do they reflect the differences between the groups as measured by the original factors.

TABLE 79

RANGE OF SCORES	Further Education	Higher Education	Open University
Extraversion	3.5 - 9.2	2.9 - 9.1	3.4 - 8.5
Anxiety	2.1 - 8.9	3.6 - 7.3	3.1 - 7.3

The range of scores is shown in the above Table . It suggests that where the individual's second-order factors are used in helping the clinician to interpret a profile, they make a useful contribution, but their value is diminished when describing the characteristics of groups. When a com-

parison was made in terms of their second-order factors, there was no significant difference between the sub-groups in this study; nor was there a significant difference between the mean scores in this study and the scores that might have been achieved by chance.

This finding is thought to support the writer's choice of test, since measure limited to extroversion and anxiety would not have provided the insight into the personality difference that has been available from an analysis of the more detailed factors measured by the 16PF.

Discussion

The high score on Factor B indicating significantly higher levels of intelligence and abstract thinking is not unexpected since the group are all students and they might have been expected to have above average intelligence. The populations on whom this test were normed, consisted of over 3,000 "rehabilitation clients, hospitalised schizophrenics and other psychiatric patients, mentally retarded, various minority groups, prison inmates and deaf students ..." (Cattell 1976). All cases read at less than sixth grade reading level, as determined by the WRAT (equivalent to a Standardised score of 84 aged 30 years). Cattell's (1976) populations may be significantly different from the sample studied here, since they might have reading abilities at, or close to, their intellectual capacity or potential. In comparison, the present group of students seem to be both more intelligent than the average for their age, and more intelligent than the above population for whom reading difficulties may have been a manifestation of wider learning problems.

Factor E revealed that the present population was significantly higher on this continuum measuring dominance, which suggests that this population is more assertive and dominant. Investigations by Maslow (1954) and Allport (1961) indicate that the main emphasis of the trait can be altered by the 'context' or pattern of other scores with which it appears. It is possible that this high score reflects the existence of an independent-mindedness and unconventional element. This pattern is felt to be in keeping with the scores on Factors G, M and Q₁.

Factor G is thought to reflect a continuum ranging from expediency to conscientiousness. Factor G also has some resemblance to ego strength, whereas Factor C is notable in its contribution to self-controlled behaviour as opposed to emotional and impulsive behaviour. The difference is the drive 'to do one's best', which is often associated with concern for moral standards. There was no support from the interviews for this to be interpreted as 'weak super-ego strength', but there was considerable support for the relationship with measured achievement. High correlations have been reported between this factor and achievement in earlier studies; often linked with interest in school subjects (Barton, Didman & Cattell 1972, Cattell & Butcher 1968, Rothman & Flowers 1970). The significantly lower mean scores achieved by the present population may reflect the feelings of these subjects in relation to school subjects, especially in view of their longitudinal problems and 'their' view of their personal achievement. (See section on Questionnaire). This pattern might also be interpreted as a tendency to act expediently. The low (expedient) scores on this factor are thought to be con-

sistent with other scores, suggesting a venturesome, imaginative and free-thinking approach.

On Factor H, the mean score is higher than average, due mainly to the high mean score (8.7) achieved by the Open University students. Cattell (1970) believes the factor measures a source trait, which on the low scores reflects a shy, timid or restrained, even rule-bound, approach. The above average mean score suggests a tendency towards a more adventurous, uninhibited or socially bold attitude. Cattell (1970) suggests that this factor has been shown to be one of the most highly inherited of personality traits; this is doubted in this case in view of the disparity between groups and a more obvious relationship would be with age. Cattell (1973) indicates that this trait increases strongly through the middle years; given the higher mean age of Open University students, this seems a more likely explanation. The other feature which may be related is that "the high H person shows little inhibitions by environmental threat and is rated 'lazy' in childhood and 'thick-skinned' in social interactions". (Cattell 1973). This factor seems partly explicable in terms of earlier experience, with many reports of suspects being labelled as 'lazy' at school.

Factor M became evident through factor-analytic work in the late 1940's. It is seen as being a subtle pattern requiring several complex descriptive phrases. Although this factor is thought to decline after early life, the higher scores in this study suggest a pattern involving an imaginative, unconventional approach, often absorbed in ideas with an intense subjectivity and inner mental life. Although significantly higher than expected, the mean score is not

sufficiently high to warrant interpretation in connection with the clinical associations of the less-stably married, or more likely to be drug addicts or criminals. It is felt to be a factor which, whether cause or effect, is related to the fact that it reflects the personality values of a group of people who, having returned to education later in life, may have become unconventional and had a more intense and subjective inner life.

Factor Q_1 has been the source of considerable interest. The mean score achieved by the present population is not only the most highly significant, but had a very low level of standard deviation. Cattell (1973) described it as a factor with a large variance, as discovered by Thurston & Chave (1929), in a similar pattern by Guildford (1959) and the attitude studies by Eysenck (1944).

"However, it shows some of the worst manifestations of instability of pattern across the subcultures, and has altered to the detriment of item validities in the 16PF factor over 20 years, such that the same scale can no longer be validly used for middle age men and young women students (Burdsal & Vaughan 1973).

The factor is correlated with affiliation to progressive political parties; the low scores suggesting Conservatism, versus high scores suggesting Radicalism. In the Handbook for the 16PF (Cattell et al 1970), it suggests that earlier studies may have achieved a correlation because this factor is rooted in a broader personality trait.

"In general research, there is evidence that Q_1 persons are more well informed, more inclined to experiment with problem solutions, less inclined to moralise, less questioning about views generally, etc. ... examination of the actual content of Q_1 items shows that they express more interest in analytical thought ... in breaking the crust of custom and tradition, and in leading and persuading people."

Cattell et al 1970.

This latter pattern is similar to that described as the reason for the different covational choices made by dyslexic students in Gottfriedson et al (1983).

The unexpected high mean score reported in this study might have resulted from the instability of this particular item, from the way it is tested in Form E, or because it is a true reflection of a particular response or cognitive difference which might be described as an experimental approach to solving personal problems. A small comparative study was carried out involving seven subjects in an effort to assess whether other forms of the test achieves similar results, i.e. when Forms A and B were administered to subjects with similar cognitive patterns (low digit span and coding scores). The scores of two further subjects were included since they had the cognitive pattern associated with language learning difficulties, but had overcome their language difficulties to the point where it was inappropriate to describe them as having Dyslexia or a Specific Learning Difficulty. Lastly, the scores from three subjects who did not have a language learning difficulty or the cognitive pattern associated with such problems were compared.

The results are seen as supporting the main findings in the research, i.e. that subjects with a language learning difficulty have adopted (possibly by trial and error) coping strategies which in turn lead them to score highly on this measure of free-thinking and experimental personality trait. All seven subjects with similar cognitive patterns achieved scores of a very high order (one of 9, six scores of 10). This pattern was also evident in those

subjects who were only excluded from this study since they were under 21 years old. The mean scores on Factor E achieved by the small research group and the main subjects of this study (mean score 9.8) were identical. In comparison, the scores on Factor E achieved by three non-dyslexic students who completed Form E were significantly lower, with a mean score of 6.3 and a standard deviation of 0.5. From these findings it is felt justifiable to claim that there is a significant relationship between the problem solving approach used by dyslexic type students and a high score on Factor Q_1 suggesting a free-thinking and experimenting approach.

The last factor which was significantly different in terms of both raw and sten scores, was Factor Q_3 . Low scores are described as involving low self-sentiment, uncontrolled, following own urges, possibly careless of social rules. High scores suggest high strength of self-sentiment, socially precise and controlled (Cattell 1973). This factor has been intensively examined in several 'self-concept' studies, because it is thought to consist of the dynamic structure around 'self-concept'. This factor is upset and reduced during adolescence, but builds up in early maturity. Low scores suggest the individual may be reported for temper or acting out at school, and criticised by parents for their companions. Scores on this factor increase with college education, steady employment, added business responsibility. Although the mean score for all groups on this trait is significantly different from the norm range, it is only at the level where it becomes necessary to interpret it when considering individuals. The difference might be explained in terms of

the lower levels of self-esteem, achieved by children with learning difficulties (Brookover & Thomas 1964, Lawrence 1971, 1973 & 1981, Rawson 1974). The lower scores achieved by subjects in this study may be seen as a further indication of the effect early learning difficulties have upon personality. Cattell (1973) found this factor to be more environmentally affected and it is therefore possible to postulate that early language learning difficulties leading to difficulties at school and into adult life, have given rise to this reduced score associated with self-concept.

Factor Correlations

The major studies providing correlations between the primary factors in the 16PF, are provided in the Handbook (Cattell 1970) with a breakdown into male and female. For the 16PF (form E), the correlations were calculated on the basis of sten scores (Cattell 1976) and the details from the Manual are reproduced below (Appendix G). The correlations provided were based on data from 914 male convicts. The data from this study is based on 30 mature students, 21 male and 9 female. The statistical analysis of the sten scores was carried out using the Spearman's Correlation Coefficient Analysis in the SPSS (Statistical Programme for Social Sciences). The four tables of data resulted from computing the correlations within each group:-

Further Education	-	Appendix H
Higher Education	-	Appendix I
Open University	-	Appendix J
Tertiary Education (All Subjects)	-	Appendix K

Further analysis of these correlations was curtailed since the traits measured are thought to be essentially different. Although significant correlations

were found in this study this may be a reflection of the size and criteria used to select the population studied.

Summary

The results from the analysis of the scores achieved by 30 subjects in Further Education, Higher Education and the Open University reveals that on several factors in the 16PF, their scores vary significantly from the levels expected. On the following factors the scores were significantly different, both as raw scores and sten scores:- (P. = .05).

B	- Less intelligent to More intelligent	= high intelligence
E	- Humble to Assertive	= more assertive
G	- Expedient to Con- scientious	= more expedient
H	- Shy to Venturesome	= more venturesome
M	- Practical to Imaginative	= more imaginative
Q ₁	- Conservative to Experi- menting	= more free-thinking
Q ₃	- Undisciplined to Con- trolled	= more undisciplined

The patterns achieved on the personality traits identified by Cattell (1970) are thought to reflect both the cognitive and environmental differences common in adults who have experienced specific learning difficulties. They are seen as being more intelligent, but with a tendency to 'lateral thinking' (de Bono 1970), involving attempts to find personally accepted solutions by imaginative and experimental routes. Thus, on occasions they will take an unusual course of action which may lead others to see them as assertive, stubborn and likely to disregard conventional approaches in favour of an expedient solution.

CHAPTER 10

EMPLOYMENT AND VOCATIONAL INTEREST

EMPLOYMENT AND VOCATIONAL INTEREST

"An individual's occupation modifies his whole way of life ... even such details as his manner of speaking and style of dress ... a person's job defines his associations and even to some extent the kind of thinking he does!"

(Rodgers, 1962).

Background

The crucial importance of a person's job is strongly supported by Gottfredson (1981) who suggests that a man's occupation represents who he is in society, it influences the expectations others have of him, as well as the income and lifestyle he provides for his family. It is argued (Rawson 1968, Foster 1972, Frauenheim 1975) that the primary factor determining the individual's occupational achievement is educational attainment; with IQ and parental socio-economic status being the next most important predictors of success because of the influence they have on the level of education obtained (Sewell & Hauser, 1975). During their late teens and early twenties, most young people are likely to have begun temporary jobs while pursuing their education or training. Gottfredson et al (1983) argued that by the age of 26, men will have already embarked upon their careers, and that the major changes in the occupational field that characterise younger men will have disappeared (Byrne 1975, Gottfredson & Brown 1981).

In the follow-up studies already reported, only seven studies include subjects whose ages extend to 30 years or above (Herman 1959, Howden 1967, Rawson 1968, Saunders & Barker 1972, Frauenheim 1975, Zangwill 1982, Gottfredson et al 1983). Of these studies Rawson's is the only one suggesting

both high levels of academic and socio-economic success are achieved by adults once described as Dyslexic.

Hermann(1959) suggested that adults seeking help with language difficulties held posts in the middle and lower socio-economic classes, and although there was a slight upward mobility related to age, none of the subjects were in Class I.

Howden (1967) divided her subjects on the basis of reading ability. The poor readers achieved posts in the middle and lower social classes, and this was found to be positively related to reading ability and lower than the position achieved by average or good readers. "Poor reading ability is still regarded as a hinderance to economic advancement and as a pitfall in social situations."

Rawson (1968) makes a comparison between the socio-economic position of father and son by comparing their attainment at the same age. The basis is the school data giving the father's occupation between 1930-1947, and subsequently their son's occupation in 1964-1965. On a five-point socio-metric class rating Rawson found that the mean score for the fathers was 1.29 and for the sons 1.84.

TABLE 85

<u>Socio-economic Class</u>	<u>Boys</u>	<u>Fathers</u>
I Professional	24 (42.8%)	46 (82.1%)
II Intermediate	22 (39.2%)	5 (12.5%)
III Minor Business	7 (12.5%)	4 (7.14%)
IV Skilled Workers	1 (1.78%)	1 (1.78%)
V Semi-skilled Workers	2 (3.57%)	0

Based on Warner (1949) 'Social Class in America'. These results suggested fathers held significantly higher socio-economic positions ($P < .001$ - Mann-Whitney test).

The mean ratings for the older half of the subjects was 1.82, and for the younger half 1.86. Rawson's table giving occupational and educational status of subjects, reflects a favourable family background and a successful outcome, which placed even the 'low language facility' group in an advantageous position.

Saunders & Barker (1972) do not analyse their data in terms of socio-economic class. However, they do give details of the subject's occupations, and these details suggest a low mean socio-economic position of 4.28 at a mean age of 36 years.

Frauenheim's(1975) study is mainly concerned with adult achievement levels on tests of reading, spelling and arithmetic. The study does extend to cover occupational positions as set out in the following table:

TABLE 86

<u>Socio-economic Class</u>	<u>Frequency</u>
I Professional	0 (0.0%)
II Managerial	4 (10.0%)
III Skilled Worker	4 (10.0%)
IV Semi-skilled Worker	10 (25.0%)
V Unskilled Labourer	15 (37.5%)
VI Unemployed	7 (17.0%)

In Rawson's study (using only 5 categories), 90% of the subjects were in the Professional Class, in this study there were none in the Professional Class. The mean score was 4.42; the table places 80% in the semi-skilled class No.IV or below. Frauenheim concluded that "The consistency of reading difficulty found in the present sample is the single most limiting factor, having both direct and indirect influence on the overall occupational standing for the

group ... occupational and educational ambition has to be compromised."

Zangwill (1982) reported an occupational 'downward shift' but apart from giving examples does not list the jobs themselves. A table is used to illustrate the mobility, for example, of fathers who had occupations classified as I or II whereas their sons are widely distributed between Classes III, IV and V.

The following table lists the distribution:-

TABLE 87

<u>Socio-economic Class</u>	<u>Subject</u>	<u>Father</u>
I Professional	2 (2.6%)	33 (44.0%)
II Intermediate	19 (25.3%)	25 (33.0%)
III Skilled, non-manual	13 (17.3%)	4 (5.3%)
IV Skilled, manual	19 (25.3%)	8 (10.6%)
V Partly skilled	9 (12.0%)	2 (2.6%)
VI Unskilled	1 (1.3%)	0 (0.10%)
Unclassifiable	12 (1.6%)	3 (4.0%)

($P < .001$ - Mann-Whitney test).
(Based on Registrar General's categories).

Excluding those unclassified, the mean occupational class attained by the subjects was 3.26.

Gottfredson et al (1983) compared occupational position in relation to a control group, to the subjects father and to the 'average' person - based on census figures. The control group was drawn from a similar socio-economic group attending a private preparatory college. It is not surprising, therefore, that both groups with the advantage of high IQ's and advantageous socio-economic backgrounds were more successful than the 'average' person. The Dyslexic adults did not achieve as high a level as either their fathers or the control group, and were one third to one half

as likely to be in professional jobs. Dyslexia was seen as affecting academic achievement and eventually entry to the professional class. The nub of Gottfredson's analysis is that dyslexic subjects were more successful in management and sales posts, where they obtained incomes comparable with those earned by professional people.

A re-analysis of Gottfredson's figures into the six categories used by the British Registrar General provides the following table of percentages according to occupation. (Mean number in each category is 405).

TABLE 88

<u>Socioeconomic Class</u>	<u>% Dyslexic</u>	<u>% Father</u>	<u>% Control</u>	<u>% General</u>
I Professional	16.7	31.3	51.2	15.0
II Intermediate	64.3	65.9	43.2	22.1
III Skilled non-manual	6.0	0.3	3.2	14.7
IV Skilled manual	5.9	2.0	1.4	21.9
V Partially skilled	4.6	0.5	0.2	20.3
VI Unskilled	2.5	0.0	0.7	5.9

(Household and unemployed not included)
(Comparison Dyslexics vs. Fathers and Control, $P < .001$ - Mann-Whitney test)
(Mean dyslexic category 3.28)

Analysis of Socioeconomic Mobility

In the studies quoted above, dyslexic subjects in all studies except Rawson, achieved mean scores that suggest that they will only attain a skilled non-manual post, 3.26 or below. Using the data available in the studies of Rawson (1968), Zangwill (1982) and Gottfredson (1983), it is possible to make a comparison between the socio-economic position of students who earlier suffered from a Dyslexic type difficulty, and their fathers' positions. Rawson attempts to make an allowance for age and progress in a chosen career, but all studies indicate a significant difference between the level

achieved by the father and that of the son. All studies reveal that the affected person (son) is highly unlikely (P<.001)¹⁷ to attain the position reached by the parent. A specific learning difficulty, therefore, is very likely to become a vocational disability.

Vocational Interest

In a detailed study of the Vocational Interest patterns of learning disabled males, Freeman (1975) studied 150 male subjects at the 9th grade (15 years old) and 12th grade (18 years old). Using the Peabody Picture Vocabulary Test he selected subjects having an IQ of above 85, with a mean of 105. Freeman used the Kuder General Interest Survey and the Geist Picture Interest Inventory. Freeman's findings were that there was no overall difference in vocational interests of learning disabled and normal adolescents at the 9th and 12th grades.

"The L.D. adolescent is not barred from any particular occupational area, but may be limited to certain levels in an area. The task then becomes one of assisting the L.D. adolescent into a job area in which he expresses interest, but at a level commensurate with his abilities. The normal adolescent may choose a lower level of job for many reasons, the L.D. adolescent may be restricted to a lower level position by virtue of the disability."

Freeman used the Californian Test of Personality to assess both the L.D. and controlled groups. He found significant differences on ratings of total social adjustment, total adjustment, self-reliance, personal worth, personal freedom, sense of belonging, social standards and anti-social tendencies. In all these cases, the L.D. group had significantly lower scores than the controlled group.

Freeman's conclusions were based upon the assumption that vocational maturity and adjustment are reflective of overall

life adjustment. The results suggest that adolescents with learning disabilities might be expected to experience vocational adjustment difficulty, they will be limited by their disability and by their basic personality "to those areas where the job requirements are not in conflict with their disability".

A British study by Walker (1980) found that individuals with special needs are less than half as likely as their peers to have spoken to anybody about leaving school; in particular, they are significantly less likely to have spoken to a careers advisor or careers teacher. Walker concludes that the career guidance offered to disabled people is a seriously neglected area. In the recent report from the Further Educational Curriculum Review and Development Unit (1981), they point out that vocational preparation of students with learning difficulties is currently unco-ordinated, unevenly provided and lacking in status. For young people with special difficulties the multi-disciplinary form of assessment advocated in the Warnock Report and the Education Act (1981) will be valuable, but it comes too late for the majority of adults. Without help, earlier reports (REHAB, 1974) suggest:-

"There is no doubt whatever that a considerable number of adult Dyslexics, because of their disability, are employed in jobs which underuse their capacity or subject them to potentially damaging stress and strain, and that anything which can be done to improve the situation should be done."

The National Bureau for Handicapped Students (1981) makes the point that a handicap is not a static condition, and depends upon many factors within the individual's environment that may call for repeated assessment, re-training and new educational opportunities throughout life.

Rasalem (1974) draws attention to the fact that subjects do not outgrow their learning problems, but that the demands of living change. Halsey, Floyd and Anderson (1961) made a point which is equally valid today, that in an increasingly complex and technologically advanced society, educational success and occupational achievement are generally linked. The changing demands in social and occupational spheres have led to recognition that an individual may be handicapped in one situation but not in another; thus Harris (1971) makes the distinction between the 'Disabled' person who has sustained the loss or reduction of a functional ability, and the 'Handicapped' person who, consequent upon a disability, is disadvantaged with respect to his or her environment. Continuing in this theme, Myers & Hammil (1969) suggest that the key word in a definition of learning disability is a 'discrepancy', "implying the presence of a meaningful difference between what the learning disabled person is capable of doing and what he is actually accomplishing".

Recognition of the discrepancy between what the individual should be capable of achieving and what he or she is actually achieving has led to the development of programmes concerned with both vocational and academic training. The aim of the John Hopkins study (1976) was the recruitment and training of professionals to work with adults with Specific Learning Difficulties so that they might become employable or promotable. This report concerned a pilot study providing individual instruction in reading and specific vocabulary skills together with counselling, which initially covered a 14-week period, although it was later extended by a further six weeks. The programme was essentially client orientated and the major conclusion was

that personal motivation was a major factor. In other studies, findings differed considerably; the reports of the 'Santa Barbara Project' (1967 & 1972) suggested that: "illiteracy is a significant cause of poverty, often precluding employment in even the most menial of jobs". A high incidence of Dyslexia exists among youths exhibiting anti-social behaviour, but substantial improvements in social attitudes occur with reading remediation. Remediation that teaches him/her to read and write, resulted in the development of positive self-esteem, and an improvement in self-esteem brings about lasting upgraded economic and social status. Those clasified as 'mild' made the greatest overall progress. A further study commissioned by the U.S. Department of Labour (1972) and undertaken as the Nashville Concentrated Employment Programme - Literacy, did not come to the same conclusions as the Santa Barbara Project, since the subjects in the Nashville Programme apparently had much higher achievement levels and for the most part were considered functionally literate.

In Britain the majority of language orientated help has been through the Adult Literacy Scheme, more recently referred to as the Adults Literacy Basic Skills Unit. Some Local Authorities have provided additional support, for example, the Learning Difficulties Support Service (Millar, 1982), the Further Education for the Handicapped in Cardiff (Richardson, 1982), and the Work Orientation Unit in North Nottinghamshire (Hutchinson, 1982), together with the courses which are provided by Charitable bodies such as the Portland College. Most of these courses are designed to help people with a wide range of handicaps including specific learning difficulties, but often fail to implement

one of the main recommendations of the Russell Report (1973), which suggests special provision for identified groups of disadvantaged adults. Such help that is available in Further Education is often on an ad hoc basis, relying on the academic staff to make provision under the heading of 'Communication Studies'.

THE PRESENT STUDY

In the assessment of vocational interest, four categories of information can be discerned:- expressed, inventoried, manifest and tested. (Supex 1949, McKenzie 1954).

1. Expressed interests are defined by the statements an individual makes about his interests. It is assumed that the responses are accurate responses of real interests.
2. Inventoried interests are the most widely studied interests, as they are statistically treated statements that yield scores which may be compared with derived scores of others on that measure.
3. Manifest interests are defined by the person's observable activity. An individual may express an interest in a certain area, but never involve himself in that area. Then there would be expressed, but not manifest interest. An example of the individual's manifest interest is taken to be his work experience, either his present or past jobs.
4. Tested interests are inferred from the person's fund of knowledge as measured by tests of information, on the theory that if the person learns what interests him, it is expected that a person's interests show a degree of consistency.

In the present study two of these sources of data were utilised, Manifest and Inventoric. Evidence of the individual's 'manifest interests' was obtained by the data elicited by the questionnaire. This data covered both present and past occupational status of both the subject and father.

Inventoric interest was measured using the Thurston Interest Schedule. This interest schedule replaces the older Vocational Interest Schedule, first published in 1947. The present schedule consists of 100 pairs of occupational titles arranged in a ten by ten table. Each cell of the table contains two occupational titles. The task for the subject is to indicate his preference for one of the two occupational titles in each cell. The schedule yields a profile of preference within the ten spheres covering Physical Science, Biological Science, Computational, Business, Executive, Persuasive, Linguistic, Humanitarian, Artistic and Musical interests. The schedule takes approximately 15 minutes to complete, although there is no time limit. It is clearly set out, easy to read and has straight forward instructions. It is suitable for any age range from adolescent through to adults, including college and university students. In his review of the schedule, in the Four Mental Measurements Yearbook, Frederiksein concluded that "the item validities are on the average considerably higher than one typically finds for most types of test". The schedule is simply scored by adding up the individual's preferences for certain types of job, which are then transferred to a profile. The Manual (1947) suggests that "the profile shows at a glance whether a man is interested more in certain fields than

in other fields ... the profile may show that he is equally interested in several fields, and not at all in certain others". This schedule was administered to all subjects and scored by the author, who produced a profile for each one, from which the subject's preferred vocational interest area could be extracted and compared with his manifest interest in the form of his present occupation.

The third form of analysis was into social class and socio-economic classification. The Registrar General's Categories were used, based on the Classification of Occupations, 1980. It has become customary to arrange the large number of unit groups in the Occupational Classification into a smaller number of broad categories called Social Classes. These are:-

TABLE 89

- (1) I Professional, etc., occupations
- (2) II Intermediate occupations
- (3) III Skilled occupations -
 - (N) non-manual
 - (M) manual
- (4)
- (5) IV Partly skilled occupations
- (6) V Unskilled occupations

This system of classification was used when evaluating the answers obtained from the questionnaire which related to the subject's first job, present job, and father's job. The other data extracted from the questionnaire related to the subject's reason for choosing the initial job, whether language difficulties influenced the subject's long-term career choice, and if language acquisition differences influenced choice, whether this was a major or minor

factor. Classes were renumbered, as indicated in brackets, to permit statistical analysis.

Spheres covered in this Study

Outcomes were postulated as being likely from the results of testing the individual's vocational choice in the light of their experiences with Specific Learning Difficulties.

1. That SLD/Dyslexia would have the effect of restricting the individual's range of vocational choices.
2. That individuals who had experienced a language learning difficulty would avoid positions which required a high level of language skill.
3. That language learning difficulties would have the effect of preventing the individual from obtaining the entry qualifications necessary for admission to certain vocations.
4. That individuals who had experienced language learning difficulties would consequently have a lower social occupational post when compared with their fathers.
5. That subjects who experienced language learning difficulties would show evidence of a discrepancy between their vocational interest preference (as measured on the Thurston Interest Schedule) and their actual work experience.

1. The first suggestion that Dyslexics would be restricted in their range of vocation choice, was tested by analysing data from the following questions drawn from the main questionnaire:-

a) Did language difficulties influence your long term career choice?

b) Did language influence your choice of job?

c) If so, how?

d) Why did you choose your first job?

a) The effect of language learning difficulties upon the individual's career choice is evident by the fact that 28 subjects (N=30) reported that their choice of career had been restricted by their language learning difficulties. Only two subjects reported that their career had not been influenced, and one of these was currently employed in the family firm.

b) In answer to the question of whether language difficulties influenced the individual's choice of jobs, 28 individuals or 93% reported that their difficulties did influence their choice of a job. Of this 93% (who reported that their choice of a job had been influenced by their learning difficulties) the following replies were received in answer to the question "How severely did language skills influence your choice of jobs?"

TABLE 90

The Influence of Written Language Skills on Job Choice

The Main Influence	15 : 50% severely limiting factor
A Major Influence	8 : 28% considerable factor
An Influence	4 : 14% an influential factor
Some Influence	2 : 7% a little
Of Little Influence	0 : - not at all

These figures suggest that language learning difficulties have a considerable influence on the short and long term vocational choice of the Dyslexic adult. 93% of subjects

reported that their choice of jobs and choice of a long term career were influenced by their language difficulty. An analysis of the influence that their difficulties exerted over their choice was calculated, this indicated that it was the main influence in 50% of the cases.

2. The second suggestion was that adults who had experienced language learning difficulties would avoid positions which required a high level of written language skills. Evidence in support of this hypothesis is available from two sources. Firstly, by comparing the number of subjects involved in linguistic vocations, and secondly by examining the reasons subjects gave for choosing their actual work. An analysis of the subjects' occupations indicate that none of them held posts which might be classified as linguistic in nature. This compares unfavourably with the fact that eleven subjects would have chosen to work in linguistic areas had they had the opportunity. The second area where evidence is available concerning the requirement of language skills, comes from the subjects' responses to the question of "Why did you choose that job?". Reasons for choice were categorised in terms of:-

- a) Available (subject prepared to accept any post);
- b) Local (subject did not have to move);
- c) Did not involve written language;
- d) Chosen career (part of career development).

These were not exclusive categories and some subjects recorded more than one factor influencing their choice.

TABLE 91

	<u>Reason for Choosing Particular Job</u>			
	A	B	C	D
Further Education	7	2	4	0
Higher Education	9	1	6	1
Open University	5	1	9	2
Total	21	4	19	3
Percentage	70%	13%	63%	10%

Subjects reported choosing their jobs as a result of being influenced by one of two factors, either availability or not involving writing. A total of 21 subjects (70%) reported choosing a job simply on the grounds that it was available; nine higher education subjects and seven further education subjects chose their jobs on this basis, but only one Open University student chose for this reason.

In all, 19 subjects reported having chosen their job on the grounds that it made few demands in terms of written language skills. Here the proportions making the choice were reversed, with four further education students reporting having chosen for this reason, six higher education students made the choice on this basis, but nine Open University students consciously avoided posts which involved written language skills. These figures suggest that 63% of all subjects chose jobs because they did not involve written language skills, and that none of the subjects held posts which might be described as linguistic occupations.

3. The third premise suggests that a language learning difficulty might have the effect of preventing the individual from obtaining the entry requirements to certain vocations.

The main evidence is thought to be the low level of achievement measured in terms of exams taken and passed before leaving school. 18 out of 30 subjects either never took, or did not pass, any examinations before leaving school.

In fact, only eight subjects had passed the 11-plus exam while at school. Of the twelve who took and passed exams, the majority - seven - took C.S.E. examinations, while the remaining five obtained passes in either the School Leaving Certificate, Matriculation or G.C.E. The following table summarises the number of exams taken or exams passed before leaving school.

TABLE 92

School Leaving Attainment

Exams either not taken or not passed	..	..	..	(18)
C.S.E.	..	..	..	( 7)
Mixed (GCE, Matric., School Leaving Cert.)	..	..		( 5)

4. The fourth suggestion concerned the effect that language learning difficulties would have on the socio-economic position of the subjects in comparison with their fathers' positions. In order to determine the effect of the Dyslexic type learning difficulty, both the subjects' and their fathers' jobs were classified according to the Registrar General's Classification of Occupations (Table 89). The mean scores achieved by the Dyslexic subjects were not significantly different from the mean scores achieved by their fathers. (Table 93 p 341).

In order to compare the relative positions between populations, four tables were prepared. The first table presents data regarding the subject's socio-economic class, and

reveals that although there was no noticeable difference between the mean score of subjects in further and higher education, there were significant differences when compared with the mean score of Open University students. The total scores for all subjects suggest that the modal score would be social class IV, whereas in the Open University sample the mode would be social class II (Table 94).

Two reasons might account for this, firstly that the Open University students were fortunate in having originated in more highly placed socio - economic families, or secondly, it may be due to the fact that the Open University students are older. In the table comparing the social class of the fathers it can be seen that the socio-economic class achieved by the fathers of all subjects does not differ significantly (Table 93). This suggests that the significantly better position achieved by Open University students is not in fact due to more advantageous family backgrounds.

As already suggested, where Open University students differ significantly from the other two groups, is in age. Open University students are significantly ($P < .01$) some twelve years older than the other two groups (Table 96). Despite the size of this sample, it is felt that this provides evidence for the conclusion that Open University students are, in fact, in a higher socio - economic class because they are older and therefore established in their careers. This would explain not only the differences found in this study, but also the results obtained by Zangwill (1982) whose subjects, like those drawn from further and higher

education in the present study, were found to be in socially economic positions below those achieved by their fathers.

TABLE 93

Socio-economic Class		Subjects		Fathers	
I	Professional	1	3.2%	6	25.0%
II	Intermediate	6	20.0%	2	6.6%
III	Skilled non-manual	4	13.3%	4	13.0%
IV	Skilled manual	5	16.6%	9	30.0%
V	Partly skilled	12	40.0%	9	30.0%
VI	Unskilled	2	6.6%	0	-
		30		30	
		$\bar{m} = 3.9$		$\bar{m} = 3.4$	
Difference between subjects and fathers not significant P<.1 (Mann-Whitney test)					

TABLE 94

Subject's Socio-economic Position

		I	II	III	IV	V	VI	
Further Education				2	2	5	1	$\bar{m} = 4.4$
Higher Education				1	1	7	1	$\bar{m} = 4.6$
Open University		1	6	1	2			$\bar{m} = 2.4$
N = 30	TOTAL	1	6	4	5	12	2	$\bar{m} = 3.9$
	%	3.3	20.0	3.0	16.0	40.0	6.6	$P = < .001$

Open University subjects significantly different $P < .001$ (Mann-Whitney test) from both Further and Higher Education subjects.

TABLE 95

Father's Socio-economic Position

		I	II	III	IV	V	VI	
Further Education		1	1	2	3	3		$\bar{m} = 3.5$
Higher Education		3		1	4	2		$\bar{m} = 3.2$
Open University		2	1	1	2	4		$\bar{m} = 3.5$
	TOTAL	6	2	4	9	9		$\bar{m} = 3.4$
N = 30	%	20.0	6.6	13.0	30.0	30.0		not significant

TABLE 96

Age and Social Class

Subject	Age	Socioeconomic Class		
		Subjects	Fathers	
Further Education	$\bar{m} = 27.8$	$\bar{m} = 4.4$	$\bar{m} = 3.5$	$P \neq .06$
Higher Education	$\bar{m} = 28.6$	$\bar{m} = 4.6$	$\bar{m} = 3.2$	$P = .01$
Open University	$\bar{m} = 40.1$	$\bar{m} = 2.2$	$\bar{m} = 3.5$	$P = .05$
	$\bar{m} = 32.1$	$\bar{m} = 3.9$	$\bar{m} = 3.4$	Not sig.

Age: Open University students significantly older ($P .01$ Mann-Whitney Test). Full Scale scores also correlate significantly with increasing age.

5. The final and fifth suggestion was addressed to the reported effect of dyslexia which prevented subjects who had experienced language learning difficulties from entering certain occupations. Carter (1964) in a descriptive analysis studied both the social and vocational adjustments of subjects once identified as disabled readers. The survey concluded that the language difficulty did serve as an inhibiting factor in many cases, although Carter went on to advocate research in an effort to find out what effect the learning difficulty had on job promotion and mobility over an extended period. In the present study it was possible to assess the subject's 'vocational adjustment' by comparing their 'actual' work interests with their 'ideal' work interests. 'Actual' work was made compatible by placing the subject's present job in the most appropriate Thurston Interest Category. 'Ideal' work was defined as being the category identified using the Interest Schedule. These were then compared using the individual's choice on the Thurston Interest Schedule (Table 97), with his or her work experience.

TABLE 97

Abbreviations used in Thurston Interest Schedule

PS	Physical Science
BS	Biological Science
C	Computational
B	Business
E	Executive
P	Persuasive
H	Humanitarian
L	Linguistic
A	Artistic
M	Musical

For most subjects their first and second choice on the interest schedule were comparatively closely grouped, and within five points of each other (the range being from 0 to 20). A measurement of the individual's 'vocational adjustment' was obtained by comparing their first and second choices on the interest schedule with their job. (Table⁹⁸) Where the subject's job and interest coincide they were rated as being well-adjusted. Where the subject's interests were not the same as work experience, this was marked with -, signifying an element of incompatibility or 'non-adjustment'. Thus a measurement of how closely the individual's 'ideals' were compared with their 'actual' work was obtained, which revealed that there were no significant differences between the three groups within this study, although the overall total suggests that only 15, or 50% of the subjects have been successful in finding jobs which are compatible with their vocational interest.

Further Comparisons

Two further comparisons were made, firstly comparing the group's 'actual' and 'ideal' work experiences. A second comparison was made relating the subject's first and

second jobs, and attempting to find which factors contributed to their job choice. (Job choice see p 337/8).

TABLE 98

<u>Vocational Adjustment and Choice</u>										
Further Education Subject	1	2	3	4	5	6	7	8	9	10
1st Choice	L	A	PS	L	H	A	P	L	PS	B
2nd Choice	H*	H	BS	M	PS	H	B	P*	BS	PS
Job	B	H	B	B	H	B	B	H	B	B
Same(+) or Different (-)	-	+	-	-	+	-	+	-	-	+(6+)
Reason for Job Choice	A/C	A	C	C	A	A	A/B	A/B	A	C
Higher Education Subject	1	2	3	4	5	6	7	8	9	10
1st Choice	L	PS	A	A	BS	L	M	A	L	B
2nd Choice	E	L	L	BS	A*	BS	PS	P	PS	P
Job	B	PS	P	B	B	BS	PS	PS	PS	B
Same (+) or Different (-)	-	+	-	-	-	+	+	-	+	+(5+)
Reason for Job Choice	A/C	A/C	A/C	ABC	A	A	A	A	A/C	C/B
Open University Subject	1	2	3	4	5	6	7	8	9	10
1st Choice	PS	PS	E	A	A	PS	M	BS	BS	L
2nd Choice	A	BS	L	M	PS	BS	A	H	H	M
Job	PS	A	E	H	A	H	M	H	H	B
Same (+) or Different (-)	+	-	+	-	+	-	+	+	+	-(4+)
Reason for Job Choice	C/D	C	A/C	C	C	A	A/C	C/D	A/C	ABC

+ = well vocationally adjusted, interest and job similar

- = a discrepancy between vocational interest and job

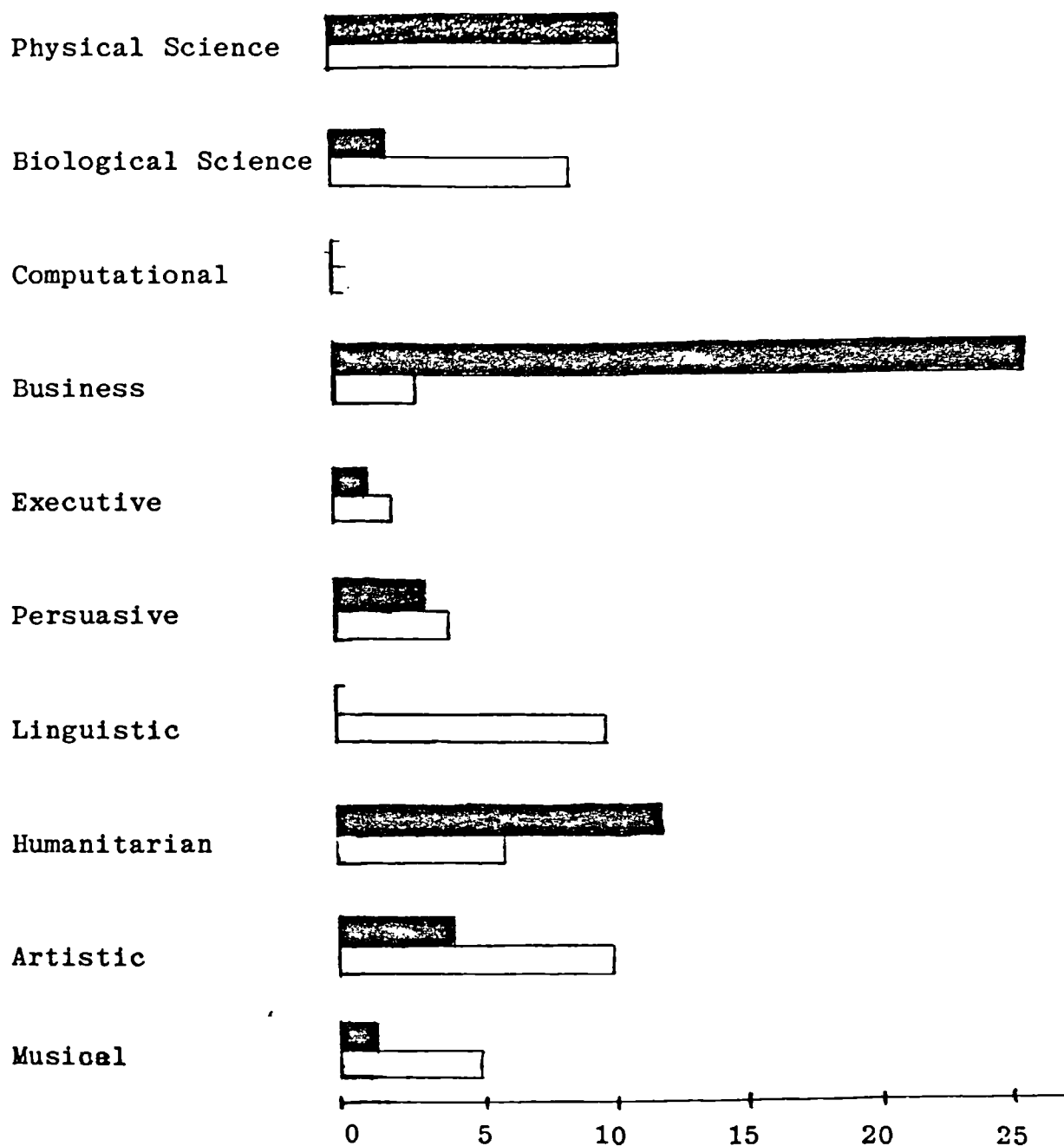
* = where there was a 5 point or more difference between 1st and 2nd choices (range 0-20) on the Interest score.


'Actual' vs. 'Ideal' Work


Using the occupational categories from the Thurston Interest Schedule, a comparison was made between the subjects' interests and work experiences. This data is presented in two ways, firstly in a table which illustrates dramatically by the use of a bar chart, the way in which many subjects have had 'actual' work experience in business, although very few of them chose this as their 'ideal' work. Discrepancies may also reflect the prevailing employment situation, the economic conditions, in particular industries or geographic areas, and those prevailing at the time when the subject was seeking or changing employment. Other factors which may contribute to the discrepancy may be due to an unrealistic 'ideal' work concept, and the fact that what a modern society requires may not be what the individual may wish to do as an ideal. It is interesting to note that none of the subjects listed as their 'actual' or 'ideal' work being involved with computational skills. Conversely, and especially noteworthy since it largely contradicts their previous language learning difficulties, were the twelve choices of linguistic occupations as an 'ideal' job. A summary of this information must conclude that the 'job market' requires more people to be involved in business activities, although they may not have chosen this as their 'ideal' work. For the most part 'ideal' and 'actual' work are not as dissimilar as might at first be thought, but the number of subjects showing an interest in linguistic occupations suggests that their range of occupational choice has been limited by their learning difficulties.

TABLE 99

Work Experience Compared with Vocational Interest



 Job (classified by Interest) 'Actual' work

 Choice (classified by Interest) 'Ideal' work

'Actual' work compared with 'Ideal' work

The next Table (Table 100) attempts to equate the individual's first and present job with their first and second vocational choice. Within the Thurston Interest Schedule there is a 'forced' choice between two alternatives, and the results are plotted on a profile from which the individual's first and second choice will necessarily be different, whereas their first and present jobs may fall within the same vocational interest category. There was no data available upon which to base an objective measurement of how keenly the individuals felt the difference between their 'actual' and 'ideal' work, but the large numerical discrepancies related to businesses, biological sciences, music and linguistic choices suggest that many individuals (50% in this study), experience a dichotomy between their work and vocational interests, and might be described as vocationally 'non-adjusted'.

Comparing 'actual' work experience with 'ideal' or vocational preference, reveals several fields in which opportunity and language skills have combined to give rise to what Carter (1964) describes as vocational 'non-adjustment'. Although there were 26 reports of being involved in Business, only 3 subjects listed Business among their choices. The reverse was true of Biological Sciences, Musical and Linguistic choices which were considerably higher than actual work experience.

TABLE 100

Vocational Interest Pattern

	Present Job	First Job	Total Jobs	1st Choice	2nd Choice	Choice Total	Overall Total
Physical Science	5	6	11	6	5	11	PS 22
Biological Science	1	1	2	3	6	9	BS 11
Computational	-	-	-	-	-	-	C -
Business	12	14	26	2	1	3	B 29
Executive	1	-	1	1	1	2	E 3
Persuasive	1	2	3	1	3	4	P 7
Linguistic	-	-	-	7	3	10	L 10
Humanitarian	7	5	12	1	5	6	H 18
Artistic	2	2	4	7	3	10	A 14
Musical	1	-	1	2	3	5	M 6
	30	30	60	30	30	60	120

All Subjects (N = 30)

Present Employment

Very few studies list the jobs held by subjects. Herman (1959) and Rawson (1968) are notable exceptions and their tables have been set out elsewhere. (Chapter dealing with Follow-up Studies). For comparison the occupation of the subjects in this study are set out under the three main groups within the subject population.

The following are the jobs that subjects were either doing at the time of interview, or their last full time job in the case of students currently on a full-time course.

TABLE 101

Job	Further Education	Higher Education	Open University	TOTAL
Accountant	-	-	1	1
Engineer	-	1	1	2
Minister of Religion	-	-	1	1
Musician	-	-	1	1
Nurse	1	-	3	4
Clerk of Works	-	-	1	1
Technician	-	2	-	2
Skilled Crafts	-	-	2	2
Driver	1	1	-	2
Clerk	1	-	-	1
Residential Worker	1	-	-	1
Sales Person	2	2	-	4
Diver	1	-	-	1
Apprentice/Trainee	-	3	-	3
Housewife	1	-	-	1
Barman	1	-	-	1
Factory Worker	-	1	-	1
Unemployed	1	-	-	1
	10	10	10	N=30

Return to Education

One of the questions which was thought to have some bearing on the individual's vocational adjustment, was "why are you

back in education?". If, as the majority of the studies reviewed earlier suggest, many of the subjects may have unrealistic expectations, and problems in vocational adjustment, it might be expected that a large proportion of students would be dissatisfied with their present job and returned to education later in life because they wish to advance their job or career prospects. An analysis of replies to this question reveals that the majority (17 subjects) replied that they were back in education to further their job or career prospects. Of the remainder, three did not reply and ten suggested that they had returned to education for reasons of self-development or intrinsic interests in learning of the subject. These results seem to support Herman (1959), since they suggest that the majority of subjects return to education despite having left school with no qualifications, or very low levels of attainment. Their difficulties having become sufficiently 'stabilised', enables them to embark on more advanced education or training, and the need for additional vocational qualifications is thought to be the 'motivating' factor.

TABLE 102

<u>Why are you Back in Education?</u>		
To further career	17	56.6%
Self-development and interest in subject	10	33.3%
No reply	3	10.0%

Summary

The review of the literature reveals that the socioeconomic position achieved by individuals experiencing language learning difficulties is substantially lower than that

achieved by either their fathers or control groups. The majority of studies in Britain deal with a wider range of difficulties, as suggested by the terms 'learning difficulties' and 'learning disabilities'. In the only recent follow-up study (Zangwill 1982), the data supports the view that Dyslexic type subjects find themselves at a social and economic disadvantage. The present study found that although substantially disadvantaged, the population studied in tertiary education failed to differ significantly from the positions achieved by their fathers. When a more detailed comparison was made, it was found that Open University students were significantly older ($P < .01$) than the other two groups, and had achieved significantly higher socioeconomic positions ($P < .001$) as compared with the subjects in Further or Higher Education. Open University students also achieved a higher socioeconomic position as compared with their own fathers ($P < .05$). In comparison, the socioeconomic position of other subjects in this study, lagged behind the level achieved by their fathers, and in the case of the Higher Education students, this was significant at the $P < .005$ level. These results suggest that age is a major factor; since it affects both the point at which an individual's progression in a chosen career is assessed, and since it dictates the stage at which a comparison is made with the father's achievements. The difference between generations may also be explained in terms of a 'developmental deficit', since it might be argued that an individual experiencing language learning difficulties is likely to take longer or have to re-sit more academic stages; this in turn is likely to delay career development and consequently place such an individual at a disadvantage.

at a given age, especially during the early years of career development, usually while the subject is in his/her 20's.

The effect of language learning difficulties on vocational choice was analysed in two ways. A comparison of the individual's level of vocational adjustment was made by comparing first and second vocational choice with actual job category. It was found that only 50% of subjects had jobs in either their first or second choice on the interest schedule. This discrepancy between 'ideal' and 'actual' work is described as revealing an element of 'vocational maladjustment', indicating that half the subjects were experiencing a measurable level of frustration. By comparing both first and second choice, on 'actual' work and 'ideal' work, a more dramatic picture emerged, with employment in Business being recorded in 26 cases, although it would have been chosen in only three cases. The first three choices and the first three most common occupations were:-

<u>'Actual' Work</u>	<u>'Ideal' Work</u>
Business	Physical Science
Physical Science	Linguistic
Humanitarian	Artistic

The two most frequently recorded 'actual' work posts were Sales person and Nursing.

The majority of subjects (28) reported that written language difficulties had been a factor in career choice. 19 chose a job because it did not involve writing and 18 reported not having passed any exams before leaving school. The most frequent reason given for returning to education was to develop their career (17) although 11 subjects gave

interest in the field of self-development as their reason.

From the comparison in socioeconomic terms, it would seem that the older subjects had been able to overcome their continuing difficulties and improve their position significantly as compared with either subjects in Further or Higher Education, or in comparison with their own fathers. However, the overall conclusion must be that written language difficulties are a major influence in the vocational choice, adjustment and achievement among adults with dyslexic type difficulties.

CHAPTER 11

STUDIES OF DYSLEXIC ADULTS

STUDIES OF DYSLEXIC ADULTS

"Very little attention has been devoted to the specific language disabilities of adults ... The problems of these adults seem almost insurmountable. They are truly a silent minority, embarrassed by their disabilities and reluctant to expose skill deficiencies. Many are on the lower end of the socio-economic scale and although often bright and capable workers, they cannot move to the next level of job placement. The new position invariably requires proficient reading and writing skills. These adults are then locked into low paying jobs with little hope of advancement. We can only speculate about the tremendous emotional toll exacted under these adverse circumstances."

Bain, A.M. (1982).

Sources of Information

It would be inaccurate to claim that there is little information about dyslexic adults. There is, however, very little information about dyslexic adults compared with the wealth of literature dealing with dyslexic children. Four categories can be identified with the literature dealing with dyslexic adults:-

1. General studies of dyslexic adults.
2. Case studies of dyslexic adults in tertiary education.
3. Case studies by dyslexic adults.
4. Case studies of dyslexic adults.

Studies of Dyslexic Adults

This first category is by far the most numerous, comprising a conglomeration of reports taking widely different forms, and covering the diverse range of circumstances in which reference to dyslexia can be found. These reports include longitudinal studies which follow the child into adult life (Hardy 1968, Frauenheim 1975, Gottesman 1979, Gottfredson et al 1983). From one such study Rudel (1981)

concluded:-

"We have had the opportunity to examine a great many young adults between the ages of 20 and 30, and found in their current difficulties the vestiges of old learning disabilities and of remediation strategies and compensatory mechanisms which, in new contexts, have become counter-productive."

Some adolescents, released from the bonds of education, sink into the morass of illiteracy and semi-literacy (Howden 1967, Gow 1974). Calfee (1982) stresses that:-

"The bottom line is the same, that literacy is one of the most vital skills for success in modern society."

This echoes the view expressed in support of the 'Right to Read' campaign, that literacy is of major importance to "the daily lives of people and their ability to function successfully in society" (Allen 1971).

Masland (1974) stressed the biological-behavioural view when he suggested "the individual's performance today reflects the totality of his life experience", and this included the negative influence of early language learning difficulties. Other writers investigating other aspects have reached the more optimistic conclusion that "it's never too late to learn" (McClelland 1974, Ansara 1972). Some studies have dealt with academic potential of adults with specific learning difficulties (Deshler et al 1984, Alley & Deshler 1979, Balow 1965, Danenhower 1972), although the majority have concentrated on remedial techniques suitable for use with dyslexic adults with college potential (Ansara 1972, Herbert & Czerniejewski 1976, Cordoni 1979, Gregg 1983, Greenwood 1983, Morris 1983). Learning disabled students have reported feelings of sadness and depression because of their poor reading skills as well as frustration, guilt, anger, poor self-image and general unworthiness (Brunner 1974, Kline

1978, de Hirsch 1963, Roswell & Natchez 1977). Many describe extreme concern about their future in terms of employment and general life adjustment (Kronick 1975, Thompson 1974). Concern over the possible effects of specific learning difficulties are supported in studies by Silberberg & Silberberg 1978, Cook 1977, Brooks 1971, Barclay 1970, Aune & Gray 1983. Some authors recommend techniques such as Vocational Counselling in such cases (Bright 1970, Clarke 1973, Osman 1979).

Van Bijn (1976) reports that dyslexic adults:-

"Have not organised themselves to protest possible job discrimination, and employers are hardly aware of their obligations to hire persons with such a handicap."

This is an important point in view of the availability of a 'Green Card' from the Disabled Resettlement Officers certifying the bearer a 'handicapped person' for the purposes of employment (Manpower Services Commission 1976; Chronically Sick & Disabled Persons Act 1970). The effect of dyslexia does not lessen with maturity, indeed Copple (1970) suggests that such a difficulty remains central in both education and professional life. Such individuals develop intricate disguises for their handicap and are among the last to publicise their handicap, least of all to potential employers (van Bijn 1976). A study which assessed the accuracy of the dyslexic adult's perception of their own difficulties, came to the conclusion that such reports are in fact remarkably accurate (West & Lagovic 1978).

The reports which receive most attention are often those published in the popular press or magazines. To be newsworthy, these stories often refer to famous people whose names are household words. Thus, the often-cited case of

the dyslexic who, as president of an international company, can delegate pen and paper tasks to a legion of secretaries, is often overstated. Cases who benefitted from education by private tutors, or secretarial support which does their reading and writing for them, are atypical. Focusing on such cases often removes attention from the majority of cases who are truly handicapped by their difficulties.

Reports monitored in the British press during the course of this study, have ranged from 'local boy makes good' recounting success stories despite dyslexia (Paterson 1981, Goss 1980, Webster 1981, Tero 1982). At the other extreme are examples where people disappear (Everton 1982) and feelings of inadequacy lead to suicide (Waller 1980, Ackerman 1981, and in a USA case reported in Kline 1978). Between these extremes i.e. the majority of reports, describe adults who realised that they were 'different' while at school, but only gained confidence to confront and overcome their difficulties later in life (Fenn 1981, Sylvia 1981).

Two press reports were associated with potential subjects in this study. Both subjects were subsequently rejected since they were not involved with education, but serve to illustrate the complexity of factors associated with adult subjects. Regrettably, a third potential subject who was on leave from a North Sea oil rig and sought assessment at short notice, had to make a difficult decision whether to accept promotion to the post of Foreman with the resulting increase in paper work. He never kept that appointment, and was found to have committed suicide the previous day.

Press reports dealt with the tragic death of Nicholas Smith (1981a, 1981b) aged 29 years, who sought assessment of his reading and writing difficulties shortly after his nephew had

been identified as being dyslexic. The Assessment confirmed that Nicholas had severe language learning difficulties, to the extent that he qualified for registration as a 'disabled' person and was entitled to a 'green card' under the provision of the 1970 Chronically Sick and Disabled Persons Act. Subsequently he was offered a place at the Portland Training College with a view to receiving help with basic literacy. Unfortunately, days before he was due to start the course, he made an error when using a special type of car jack, possibly because he was unable to read the instructions, and was crushed to death by the car.

Other reports have linked dyslexia with delinquency (Critchley 1977). One press report headed 'Youth awarded costs in disturbing case' (Ward 1980), dealt with an incident where a youth with literacy problems was discharged. Within months a young man came forward for assessment and was found to be in a similar predicament. In the course of assessment his low average IQ was found to be mainly attributable to significantly depressed scores on the tests of arithmetic, digit span and digit symbol in the WAIS test. When asked to read printed material, his reading skill was consistently below the 9-year old level, and his spelling below the 8-year old level. On a test of his ability to read a handwritten script, he could only read 25 words per minute, and made 13 errors in 96 words. This subject was out of work at the time, living in an urban area with high unemployment. He had no formal qualifications, but a lot of time on his hands. Whether or not the substance of his statement to the Police was correct, one thing was clear, he could not have read and understood the statement he was alleged to have made. Delinquency correlates highly with social, cultural, economic and educational disadvantage

(Holstein 1951, Hand & Puder 1968, Tarnopol 1974). It may be that being dyslexia deprives some already 'at risk' adolescents of the advantages offered by the educational system, thereby propelling them into the sub-culture associated with social drop-outs and delinquency.

Dyslexia can be both a bar to education and subsequent employment (REHAB 1974). This view has recently found support in several press reports. One report concerned a forty-five year old man who lost his job because a charity for whom he worked believed him unsuitable for re-grading (Bender 1983). During a court case (Holmes 1983), dyslexia was described as a major problem in trying to find work. In an article entitled 'Words that Mean the Sack', the author suggested that "in practice, careers officers believe that those who can't read are unlikely to find work even as a driver's mate". Fortunately, cases with a happier outcome are also reported. Pearce (1982a, 1982b) originally had to rely on taking work home for his wife to write, but following the discovery that he was dyslexic, the national company for whom he worked paid for remedial help, continued to employ him in a senior post, which gave him the confidence to openly admit his lifelong problems.

Adults in Tertiary Education

Many of the reports described earlier dealt with the difficulties faced by adults in tertiary education, from the perspective of remedial intervention (Cordoni 1982b). Other studies have proposed therapeutic intervention (Bondin 1968, Berg & Wages 1982, Shuman 1975, Lawrence 1973), but very little has been done to provide a forum for adults to meet and air their views or to improve communication. In Britain

a unique provision for adults where they could be assessed and receive remedial help or take advantage of group meetings, was the RADAR Learning Disabilities Centre which closed in 1979. Since then, provision has been fragmented, for most adults the local Adult Literacy and Basic Skills Unit is the only source of help. In some regions provision is made by Local Educational Authorities, possibly in local colleges, and elsewhere Clinical Psychologists offer help under the umbrella of National Health Service. The Disabled Resettlement Officers of the Manpower Services Commission and their Training and Assessment Centres can also offer help. For most individuals help and the chance to meet informally with a group of similar adults does not exist. Private remedial help, if available, will involve instruction in an independent centre which charges fees. The exceptions are groups such as the one which meets in Bangor, or the help provided at St. Bartholomew's Hospital. The national body (the British Dyslexia Association) does not have a specific sub-committee to deal with adults, and although it has conducted surveys into the provisions at colleges and polytechnics (BDS 1981, 1982), it has not yet held a conference or course on the topic of dyslexia in adult life. The National Bureau for Handicapped Students is one of the few 'national' bodies to whom the adult dyslexic student might turn. However, the Bureau is orientated towards the needs of students, and also deals with all forms of handicap which in effect means that their coverage of dyslexia is comparatively limited.

In America provision for dyslexic adults is also restricted. The Orton Society's Annual Conference frequently involves a symposium at which adults are invited to speak; and the Association for Children with Learning Difficulties established

a Vocational Committee which produced a detailed Survey of Adults (ACLD 1982a, 1982b). As in Britain, provision is scattered, but there is significantly greater provision available through the network of Community Colleges and State Universities (Cordon 1982b). Conferences on the Equity for Disabled Students have produced valuable resource guides "designed to raise the awareness of students, staff, faculty and administrators about problems which students with disabilities encounter in educational settings". ('Trustees' of the California State University and Colleges 1980).

There are three publications originating in Texas, specifically for the adult with learning disabilities. 'Pip', a newsletter, is aimed at "college handicapped and exceptional learners and services" (Pip 1982). This publisher also provides a National Directory of training programmes for young people with learning disabilities (Moss 1980). The National Network of Learning Disabled Adults which formed in 1980, has among its goals the improvement of communication among learning disabled adults, together with encouraging educational institutions and employers to make 'accommodations' to L.D. adults. The National Network newsletter (1981) is an example of improving communications, providing details of other centres such as the Higher Education and the Handicapped Resource Centre in Washington, and the Association on Handicapped Student Services Programs in Post-Secondary Education based in Illinois. The third publication originating from Texas, was that of LAUNCH INC., the Coalition of Learning Disabled Adults, which hopes to help L.D. adults through Leadership, Action, Unity, Nurture, Citizenship and Harmony. While the range of help to which the adult can turn is welcome,

it is also confusingly bedevilled by terminology, to the extent that the dyslexic adult may find, as in Britain, that other disabilities such as mobility problems or blindness, are paramount in such organisations. In the United States the President's Committee on Employment of the Handicapped (1982) provided some valuable insights into, and details of, resources for disabled adults. Despite this progress it would seem that the National bodies with an interest in Specific Learning Difficulties have yet to form special sections to deal with the needs of adults. This could be a major advance in promoting both understanding and research into the effects of dyslexia in adult life. The present myopic emphasis on school children seems to ignore the fact that they will soon be young adults of whom new responses will be expected, and for whom remedial help with 'Ladybird' books will be totally inappropriate.

Case Studies of Adults in Tertiary Education

The following case studies reflect the three aspects of tertiary education dealt with in this study: Further and Higher Education, and the Open University. These studies are of people assessed by the writer during the research and chosen as being typical of the diverse environmental backgrounds that are encountered when dealing with dyslexic adults.

CASE - FURTHER EDUCATION I

Subject:	Female
Age:	41
Status:	Married
Children:	Three
I.Q.:	Above Average
Resident:	Urban area, North East England
Occupation:	Business Proprietor

Initial contact with this subject arose following a letter she sent to a Dyslexia Association, whose address was given at the end of an article about Dyslexia in schoolchildren. In this typewritten letter she described her early experiences:

"At school I had great difficulty with reading and can still, at the age of 40 years, recall the terror of learning to read. Standing in front of the class and being threatened that if I could not point out a certain word I must be stupid. Needless to say, I did not pass the 11-plus examination and from that day I have felt like a second-class citizen."

Childhood Her father had been a skilled craftsman, and there was no family history of language learning difficulties. There were no difficulties surrounding her birth or early childhood development, nor was there a history of perceptual problems.

School Entered school when 5 years old. Was late learning to read (9-10 years old) although aware of having a language learning difficulty from the age of 5 years. She sat, but failed, the 11 plus examination; attended a total of three schools, and left at the age of 15 years. School reports continually urged her to 'try harder' and teachers suggested she was lazy. In comparison with her peers she was very poor at academic studies and at one time it was thought this might be due to Educational Sub-Normality. The effect was to alienate her from school which she hated, and she started to hide when faced with situations involving reading and writing and felt humiliated. Her parents lost interest in her and viewed her as a failure.

Vocation Was advised to seek 'traditional' female skills as a Secretary. Attended a Secretarial course when 16 years old, was unable to do shorthand but she learnt to type. Was sacked from her first job as a Secretary because of her written.

language difficulties and this was a major influence in becoming 'self-employed'. Established her own company with her husband when 24 years old and with thirty shillings (now £1.50) capital.

Education She has sought to overcome earlier difficulties with the help of her husband:

"My husband could not understand how time and time again I could not tell left from right, remember a simple set of numbers, e.g. a telephone number, read a map to help him on his journey, think quick enough to play cards or write down the spoken word. When dyslexia came to be written and talked about on the Radio and Television he helped me. So at 30 life began to change."

She became involved with the National Housewives Register when 35 years old, and:

"This is great as I can learn from lectures and join in discussions. Finding this a good way to learn, I joined foundation classes. Writing notes was my downfall but undeterred I attended every lecture. I will never be set free from this disability but now I have the confidence to challenge myself."

Self-image Her earlier experiences had a long-lasting effect on her image of herself. On leaving school she felt socially inadequate and feared that she lacked intelligence. Her husband's support has enabled her to return to education in the pursuit of self-development, since she would like to be 'well-read'.

Current Difficulties Note taking poses a major problem. She chose courses which are flexible with few exams and a minimal demand for written expression. Still tends to miss small words when reading, and she gets letters and sentences reversed when writing. Peers were surprised at her difficulties but she continues to worry about her abilities. Avoids reading aloud, has difficulty learning music, foreign languages or poetry. Reported that her performance varied greatly day to

day - and in a later letter quoted Susan Hampshire:

"a bad day is embroidering a spelling mistake, getting lost and not being able even to look up a word in the dictionary."

Strategies Like many nervous people she felt she talked too much when anxious. Avoids situations which detrimentally affect her written language skills, i.e. frustrating tasks, stress, exams, being observed or drinking alcohol. Tries to laugh at her mistakes, but gets embarrassed, especially since some staff at the College have been anti-dyslexia. Tries to conceal her difficulties, or learns to spell and pronounce individual words in advance. Notes are a continuing problem and often have to be re-written with spelling corrected.

Vocational Interest On the Thurston Interest Schedule this subject showed a strong preference for Literary pursuits. Some eight points (maximum 20) lower was her interest in People and the Humanities. Despite her involvement in business, this was 6th out of her ten preferences.

Personality This subject was at one time excluded from the research project because she had not completed the Personality Questionnaire. When it was returned, she explained "the thought of you knowing even more about me put me off". The Second Order factors were calculated for this lady, and they revealed a less outgoing or extrovert personality than might have been expected of a businesswoman (4.4). She achieved a score inclined towards a detached or reserved attitude, and since her other scores on measures such as shyness-venturesome were within the average range, there was little to suggest the extrovert flair that might be expected on the sales side. In terms of anxiety, her score was higher than average (6.7), reflecting both a tendency towards being tense, and appre-

hensive. Her tendency to be affected by feelings and diffidence in public may be the factors which combine to make her uneasy in public. On the measure of Tough Poise her score of 6.4 reflected a tendency to be suspicious and hard to fool, shrewd, and inclined to follow her own urges. This subject's highest score of 7.4 was on the measure of independence. Her imaginative ability and high score in terms of liberal or analytical thinking combined to suggest a pattern associated with someone who might be a lateral thinker arriving at unusual solutions to problems. When plotted as a profile, her scores suggest an intelligent but rather self-sufficient individual. The higher scores on imaginative aspects and shrewd or calculating measures are matched by a more reserved side to her personality. Fortunately, she is emotionally stable and not assertive. On the measure of free-thinking (Q_1) she achieved a maximum score, and although tending to be undisciplined and prone to follow her own urges, there are suggestions that this might be counter-balanced by an apprehensive and tense side to her personality.

A postscript from the letter which accompanied the Personality Questionnaire reads as follows:-

"Last week I introduced the speaker for N.H.R.
- not only could I not say 'dietician' but I
got the whole sentence back to front. I
laughed that off too, but tears came when I
returned home. It just shows that under stress
all the learnt strategy to overcome my dis-
ability goes out of the window."

CASE - FURTHER EDUCATION II

Subject:	Male
Age:	34
Status:	Married
Children:	One
I.Q.:	Above Average Verbal Scale
Resident:	Market Town in East Anglia
Occupation:	Diver

This subject sought assessment because he was being sent on a vocationally orientated course. He was already experiencing difficulty keeping a daily log book, which he was required to do since he was employed as a deep-sea diver on the North Sea oil rigs. He feared that following the course he would be required to write more reports. This would be beyond him since although his reading was adequate his spelling was below the level of an 8 year old.

Childhood Despite a straight-forward early life, this subject was late learning to read. There was a familial history of language learning difficulties which affected both his father and brother. He was consistently dexteral, had no difficulty with left-right orientation or pronouncing polysyllabic words, and no history of perceptual problems.

School He started attending a State school at the age of 5 years and attended three schools before leaving at the age of 16 years. He had sat, but failed, the 11 plus exam. When he was eight he became aware of a learning difference, and his inability to read aloud in class. Teachers described him as lazy and not paying sufficient attention. His working class parents were not particularly worried, and he felt that although in the bottom stream he was similar to many others.

Vocation Having left school without any qualifications, and being aware of his language learning difficulties, he joined the Merchant Navy. As a Catering Steward he could avoid reading and writing and relied on his memory. He became interested in diving as a sport but became a professional diver because of the high earnings potential. His return to education was mainly at the request of his firm, but he also acknowledges that he could not go on diving for ever.

Present problems are associated with completing diving log books and he was concerned about having to write reports.

Educational Reading and writing have proved to be the main difficulties on his present course. Although a mainly practical course, he found problems associated with taking notes and yet needed notes to assist his memory. He has relied on his wife for help in writing job applications and reports in the past, but has not sought remedial help. Although the course tutors were described as being unsympathetic and not understanding, he hoped that the psychological report might influence them.

Self-image The feeling of failure at not learning to read and write at school had led this subject to avoid vocational and social situations involving reading or writing. He saw himself as a loner hiding his language problem, which tended to increase in situations of frustration, stress and particularly when being observed. There continued to be variations in written language ability - good and bad days - but this could not be attributed to alcohol since he did not drink. Generally he was aware of his difficulties in all situations and sought to conceal it, he blamed his poor handwriting as an attempt at an early age to hid his poor spelling. He preferred to conceal his difficulties from his colleagues and would listen to tapes rather than read even during long periods of depressurisation.

Current Difficulties Even as a competent professional adult and father, he found daily problems in communicating and was trying to develop multiple choice record sheets which would not require writing. An alternative when his wife was not present to help was to use a dictionary or copy the examples

of others.

Strategies Using standardised letters developed and corrected in advance had been a partial answer. Multiple choice form of record sheets had proved useful, and copying examples from the work of others. If possible, he put off written work until he was ashore and could seek his wife's help. Even then he preferred to keep writing as short as possible and found discussions a better medium. He still does not read for pleasure preferring radio, T.V. and the family when at home.

Vocational Interests The results recorded in the Thurston Interest Schedule suggested a comparatively uniform distribution of interest. Business, Physical Science and Humanities were the first three choices but these were not significantly different from other options. Only on Computational Skills did he show no interest at all.

Personality This subject's scores in terms of Second Order factors reveal that he achieved a score of 6.3 on the measure of extroversion. Although on occasions rather reserved, he does display a competitive aspect to his character and a tendency to be lively company. In terms of Anxiety, his score was lower, reflecting emotional stability and a relaxed approach. His score of 8.8 on the measure of Tough Poise suggests someone who holds strong views and the determination to see them through. He displays aspects of assertiveness, and tough-mindedness. His score on Independence was slightly lower at 7.8. This reflects his high score on experimental or liberal free thinking and his assertiveness. This subject achieved scores which suggest that he is more intelligent than average but tends to be socially reserved and self-reliant.

Slightly suspicious and hard to fool, he could also be assertive or stubborn. This was tempered by an impulsive or happy-go-lucky approach and a trend towards following his own urges. His highest score was on the experimenting or free-thinking (Q_1) scale. An overall pattern suggesting an independent and quite strong-willed individual who may adopt original solutions to problems which he encounters.

CASE - HIGHER EDUCATION I

Subject:	Male
Age:	26
Status:	Married
Children:	One
I.Q.:	Above average intelligence
Resident:	North Wales
Occupation:	Student

At the time of interview the subject was a student in the Department of Education. A keen Club level sportsman he was trying to capitalize on these skills by becoming a Physical Education teacher. He felt strongly that education was part of self-development, to which he was strongly committed.

Childhood The subject's father had experienced spelling difficulties, but there were no other cases of language learning difficulties in the family. A normal birth and childhood was only marred by reaction to an early lung infection, but this had no lasting effects. The subject was consistently sinistral, and had difficulty in pronouncing most polysyllabic words. There were no problems with left-right orientation or history of perceptual difficulties.

School This subject had started school at the age of 3½ years, and continued in State education to the age of 16 years. He sat, but failed, the 11 plus exam, despite becoming aware of language learning difficulties at the age of 8 years.

Reading and spelling difficulties were commented upon in school reports, and it was suggested that he 'could do better'. He moved several times but became disillusioned by having extra spellings to write out 100 times. In an effort to please teachers he reports having concentrated on being well-mannered. He took and passed five CSE exams before leaving school, but with poor grades.

Vocation His mother's advice was to 'get a Trade' since he was so poor at language and there was no point in sitting examinations. He took part time jobs while attending a Technical College for three years which, despite poor reports, culminated in him passing the City & Guilds course as a Media Resources Technician. He was allowed an extra hour in his exams, but his Certificate was endorsed. Subsequently he returned to North Wales and became a technician in a department of the University where he was studying. Avoiding reading and spelling were the major factors in his choice of jobs.

Education He felt his educational achievements had been poor but 'hard won'. While working as a technician he had sought remedial help and advice regarding his written language problems. Following this he had taken a Higher National Certificate. His interest in sport prompted his thirst for knowledge, and led to him choosing a course in which he could utilise his physical skills, and which gave more weight to continuous assessment than to examination results. The University was also known to be sympathetic to dyslexic students. He included a note describing his difficulty when submitting written work, but had not received any concessions in examinations.

Self-image He left school with a very low opinion of himself, the term 'lowest of the low' was how he described himself. His involvement in sport had led him to Coach and so to a desire to teach. Socially he avoided situations where he might have to read or write in public. He continued to see himself as 'different' claiming that he has to put in considerably more effort than other students. He finds reading and writing particularly difficult in exams, when being observed and his abilities vary from day to day. He avoids drinking alcohol because he fears losing control of his language skills. He did not feel that sporting skills had restored his self-esteem, rather that their effect had been to motivate him.

Current Difficulties One of the main difficulties reported was the amount of time and effort he felt he had to spend studying, claiming he was giving four times as much as other students. He had set himself high goals and felt these were expected of him because of his experience and status as a mature student. In particular, he found note taking difficult, clarity of writing was poor, and he had to spend longer reading. He was aware that there were other calls upon his time from his wife and child.

Strategies Among his strategies for coping with his difficulties he listed using a form of shorthand (shortened word forms) when taking notes. He dictated most of his course work to his wife for transcribing and correcting; she types his work which often needs rewriting a second time. Taking a course which utilised his existing abilities and placed the emphasis on course work were the result of decisions which took into account his past experiences.

Vocational Interests Two interests were considerably more developed than the rest. His interest in Linguistic and Physical Sciences scored most highly on the Thurston Interest Schedule. Although there were considerable differences between the scores on the profile, only Computational and Business fields had no interest for him.

Personality The Second Order analysis of scores suggests that this subject is more extrovert (8.8) than most people. He is assertive, enthusiastic and socially bold, combined with a tendency to be rather forthright. His level of Anxiety at 5.2 is within the average range and reflects a uniform pattern of scores. On the measure of Tough Poise his score was slightly lower at 4.8. His tendency to be impulsive and assertive was counterbalanced by his tender-minded or sensitive approach, and his outgoing or warm-hearted traits. In terms of Independence, his score of 10.2 suggests a high level of free-thinking. This is composed of high scores on measures of assertiveness, imagination, and experimental or analytic thinking.

The pattern within the 16PF scores suggests an intelligent and assertive person. Above average scores linked to social aspects suggest an outgoing, lively, uninhibited person with a tendency to be rather forthright as well as having a highly developed assertive or competitive aspect to his nature. Other scores suggest a pattern of being both imaginative and self-opinionated, but tempered by a sensitivity to others. As with many personality profiles from dyslexic adults, a dominant aspect is the high score on Factor Q_1 suggesting a free-thinking or liberal type approach, thought to be associated with problem solving.

CASE - HIGHER EDUCATION II

Subject:	Male
Age:	25
Status:	Married
Children:	None
I.Q.:	Above average intelligence
Resident:	Industrial Midlands
Occupation:	Student

This subject volunteered to participate in the research because of his interest in dyslexia and in view of his experiences as an undergraduate.

Childhood There were no difficulties surrounding the subject's birth or early childhood development which could account for his learning difficulties. There was no history of language learning difficulties, and although he suffered from asthma this did not affect his education. He was cross-lateral, using his left hand, right foot, his right eye was his dominant eye and his left eye his reference eye. He experienced some difficulty in pronouncing polysyllabic words and had difficulty with left-right orientation.

School He started school at the age of 5 years and remained within the State sector until the age of 16 years. He only attended two schools, having sat but failed the 11 plus examination, but sat and passed 5 CSE subjects before leaving. School reports suggested that his poor spelling might be due to laziness and lack of concentration. He was aware of being better than some of his peers in some spheres such as chess, but didn't understand his written language difficulties. At 18 years old he became aware of the specific nature of his language learning difficulties while studying for his GCE 'A' levels. Realising he was dyslexic was a relief since it explained his difficulties and could be communicated to the Lecturers. His parents still didn't understand why his spelling and written work was so poor.

Vocational His first job had been as an apprentice to an Optical Technician, which he accepted since it was offered to him at a time when he was fed-up with school. He then returned to education to sit his 'A' levels. With the aim of being a Social Worker he entered Brunel University reading Sociology. Despite support from his sister and brother-in-law, his written work was so poor that he was asked to leave Brunel at the end of the first term exams. This was a severe blow to his self-esteem, but he chose to seek remedial help on a part-time basis while working as a Warehouseman. Written language difficulties were a considerable influence on his long-term career decisions. Even with the advantage of remedial help to a point where he can read at the adult level, he avoids situations and posts which might involve him reading aloud in public.

Education Difficulties with written language meant that the subject was 'late' (19 years old) obtaining his 'A' levels, and following the problems at Brunel did not return to Higher Education until he was 24 years old. The second time he chose University College, North Wales, since they were known to be more sympathetic to his type of difficulty.

Self-image He saw himself as a confident extrovert now that he was back at University, although his language difficulties prevented him from doing some things he would like to have done such as acting as Club Secretary, learning music, or a foreign language. He felt returning to education was the only way to improve his financial position. He had received support from his family and wife. He generally concealed his difficulties, and only admitted that he had problems if directly confronted.

Current Difficulties These included wide variations in written language skill on a day-to-day basis. Although he did not drink alcohol he found his abilities varied adversely in other circumstances, such as when tired, under stress, in exams or being observed. Writing course work remained a problem, but understanding tutors allowed more time for course work and discounted spelling errors in course work and examinations. He still found problems in expressing arguments cogently, although he spent longer working on essays. His difficulties in making notes remain, despite using a personal form of abbreviation.

Strategies Remedial help had proved to be of value, as had the efficient learning techniques he had been taught. He had his own personal form of abbreviations for note taking and was prepared to put in the extra hours that were necessary to achieve the same marks as a non-dyslexic student. His wife typed his course work for him, and in exams he had adopted a 'bloody-minded' attitude in that he did his best and the problem was then transferred to the examiner in marking the script. When possible he asked a good speller or would use a dictionary, and found diagrams to be a help. He also found that he preferred to get information by listening to tapes of the spoken word rather than reading.

Vocational Interests The Thurston Interest Schedule revealed a closely grouped set of scores. These suggest a preference for the Arts, Humanities, Language, Personnel or Executive areas. These scores were noticeably higher than other scores, among which was a bias against Computational skills.

Personality The Second Order factors derived from the 16PF suggest this subject is rather more extrovert than average (6.7).

His high score on the measure of assertiveness and above average score in terms of social boldness were the main factors, combined with a forthright tendency. He achieved a below average score (4.2) on the measure of anxiety. This suggests that he is more relaxed and less anxious than average. His Tough Poise score of 3.8 was lower than might be expected from someone with a score of 10 on the measure suggesting assertiveness. This was counter-balanced by a score of 10 indicating a tender-minded or sensitive side to his nature. The Second Order measure upon which he achieved his highest score was that of Independence (8.7). His high score on the measure of assertiveness contributed to this as did the high score on Factor Q₁ measuring experimental or a free-thinking approach to problem solving. This was aided by a score which suggested that he tended to be expedient and feels few obligations. The wide variations between scores on individual factors were a noticeable feature of his personality profile.

CASE - OPEN UNIVERSITY I

Subject:	Male
Age:	50
Status:	Married
Children:	Two
I.Q.:	Above average intelligence
Resident:	Rural area, East Midlands
Occupation:	Worker Priest

This subject was one of those who replied to the pilot study request. All his letters and academic work are typed by his wife. Since being assessed he has completed his studies and been awarded his B.A. by the Open University.

Childhood There were no complications surrounding his birth. At that time his parents lived in South Shields, in the Tyne-side area of North East England. This area was severely .

affected during the Depression, so that his childhood development was affected by malnutrition, affecting his teeth and hair. There was no family history of language learning difficulties, although his father, who was a skilled Shoemaker, rarely read. On tests of laterality he was predominantly left-handed, although reporting to be ambidexterous for many activities. He had no difficulty pronouncing polysyllabic words, but reported that using his right hand can produce speech difficulties. He does not have problems of left-right orientation now, but this was a factor in earlier life.

School He was educated in a State school from the age of 5 years old and stayed at that same school until 14 years old. He received few school reports, those that were issued indicated reading and writing difficulties. He was unable to read while at school despite regular attendance which was disrupted by Air Raids during the war. For one year he was in a class of 101 pupils, and after the war the teachers seemed 'war-weary'. Being left-handed was frowned upon in those days.

Vocational Having left school without taking any exams, he underwent training as a Tailor/Garment Maker. He was taught to do this right-handed, and became a tradesman without having to sit a written examination. When called up for National Service it was obvious that he had a reading and writing difficulty. Only when 23 years old did he learn to read with 'some measure of confidence' after a lot of help from friends. In his early 20's he felt he had been 'called' to enter the Church. He attended a Technical College to take the 'O' level exams he needed to get entry to Theological College.

"This was a physically painful business for I was training to read and write against a background of doing my trade (Tailor) all day with my right hand. The physical pain was mainly at the back of the head and at times at the temples. There was also a recurrence of the masses of boils all over my body and head. The first occasion of the boils was when I took up tailoring and converted to a right hand trade."

He eventually entered a Theological College and despite some unsympathetic tutors, but helpful peers, he obtained a Certificate in Theology.

Social During his early life he recalls the problems created by not being able to read street names, destination boards on buses and trains, or Standing Orders during National Service.

"Reading aloud in committee or public is still a great problem, but with contemporisation of things like Bibles and Prayer Books, the struggle with these has lessened. Elizabethan English was a terror and Gothic Script was impossible. The reading of other people's handwriting, unless it is the kind of script you use, is almost impossible to read. If you cannot interpret the word on a page, you just tell the congregation you cannot make sense of it and pass on."

Education Two factors seem to have influenced his decision to return to formal education:-

1. Desire for self-development;
2. Wife's interest and support.

He reports wanting to get out of a rut, and feeling that now he knew the cause of his learning difficulties he was better able to cope. His wife was an Open University undergraduate, following a different profile of courses. She was very supportive and typed his course work and much of his private correspondence.

He had been disappointed by the lack of sympathy he had encountered in many University Tutors. Attitudes seemed to differ between tutors and courses. He had one viva, and on another occasion more time was allowed in an examination.

Taped courses had been found to be very useful, or a 'reader' would have been helpful. He would like someone who would read the paper to him. This comment is echoed by other reports and in an example where an identified dyslexic student, although granted additional time, asked for a word in the exam paper to be announced, but was told that since it was the correct word in the correct place it could not be read aloud!

Self-image This subject knew he was different as an adult but failed to overcome the earlier view of himself as being less able than his peers. As a result of seeing an article on Dyslexia in 1971, which listed the main characteristics, he recognised these as being those which had dogged him for so long. He described the relief he felt when discovering that he was not 'abnormal or subnormal'. Although his position as a priest made demands upon him, he was only able to cope by preparing in advance, ad-libbing, or being honest with a congregation. His language learning difficulties continued to influence his social life, preventing participation in holding an office in clubs, reading aloud and learning foreign languages. He reported clear differences in ability between 'good and bad' days, especially in situations when tired, with frustrating tasks or exams. A major problem when trying to enter the Church or in the Open University had been unsympathetic tutors.

Current Difficulties Current difficulties in education are associated with the amount of reading required, the difficulties of written expression, and these are only overcome with the help of his wife's typing. Difficulties were not restricted to academic pursuits:-

"Since entering the Church, I have returned to industry as a worker-priest, and I do believe that dyslexia and a measure of arithmetic difficulty have prevented my promotion possibilities into a job which satisfied my intellectual abilities."

Strategies Note taking can be a problem, so different styles of note taking had been adopted. He felt strongly that 'self-management' was an important factor, and efficient learning techniques should be adopted. When writing and in doubt about how to spell a word he asked a good speller.

Vocational Interests The pattern of interests recorded by this subject on the Thurston Interest Schedule revealed a strong preference for biological sciences. Two points lower, but all at the same level, were his interests in the Humanities, Art and Music. His lowest choice would have been a post involving computational skills.

Personality On the Second Order factor analysis, this subject achieved scores indicative of someone with a tendency towards being extrovert (6.7). He showed evidence of being easy to get along with, and an element of self-assurance. On the measure of Anxiety, his score was only 3.1, suggesting an average level of anxiety. This seems to reflect his scores indicating that he is emotionally stable, free from jealousy, and with a tendency towards the imaginative side, possibly careless of practical matters. In relation to Tough Poise, his score of 4.5 is also slightly below average. His high score on the factor which reflected an assertive aspect to his nature was countered by a tendency to be tender-minded, even sensitive. As was noted earlier, he tends to be extrovert, and his warmhearted and outgoing scores tended to depress his score in terms of Tough Poise. On the measure of Independ-

ence, his score of 9.2 was higher than average. This reflects the assertive, imaginative and self-assured aspects of his nature. With these are the high score suggesting an experimental or free-thinking approach to problem solving.

CASE - OPEN UNIVERSITY II

Subject:	Male
Age:	59
Status:	Married
Children:	Two adult children
I.Q.:	Above average
Resident:	Urban Midlands
Occupation:	Clerk of Works

The initial contact was made by the subject's Open University tutor who was concerned about his written language abilities despite adequate intelligence. He dislikes writing letters and all the arrangements had to be conducted by telephone. He found orientation difficult in a strange town and chose to travel from the railway station by taxi.

Childhood There were no factors in his family history or surrounding his birth that might be associated with his problem. He did report being late talking and having a stammer when starting school. On testing, he was found to be cross lateral, with his left eye being his dominant and reference eye. He wrote with his right hand and kicked with his right leg, but reports being ambidextrous for some things. He had no difficulty recalling the months of the year, and could say them in reverse order very fast. Pronouncing polysyllabic words still posed a problem with him experiencing difficulty with 4 out of 6. He did not experience any problem with left-right orientation, but reported that he had adopted a strategy involving mental orientation.

School He entered a state school at the age of 5 years, and only attended two schools before leaving at 14 years of age.

He did not like school and was afraid of the teachers. He was educated mainly in special classes because of his poor spelling, reading and arithmetic. He received no remedial language help but found he was quite good at Geography and History. In retrospect he felt his mother was over-protective, describing him as a 'nervous lad' or 'handicapped'. He left school without attempting any exams.

Vocation His first job was as a painter and decorator because he felt he could only do manual jobs. He obtained practical experience working on building sites, but found his choice of jobs was severely restricted by his inability to spell. He attempted a City & Guilds course to be a Clerk of Works, but was dissuaded from continuing because of his written language problems. In his mid 40's he took another City & Guilds Course in Concrete Technology but failed the exams. In the end he managed to get accepted into the Clerk of Works Institute as a mature member on the basis of work experience. He reports that he still has difficulties in reading specifications.

Education He came to education in the form of the Open University with the encouragement of his second wife. He reported that for the first time he had found a structure and goal in life. He chose the Open University because as a devotee of the spoken word broadcasts on radio, he used to listen to the programmes for different courses and found he could understand them.

Self-image Having left school believing himself to be Educationally Sub-Normal, he had a very low opinion of himself. He became a loner who enjoyed hill walking, and learnt to play the organ by ear. His earlier problems influenced

many aspects of life, his work, education and philosophical outlook which he described as left-wing radical and Marxist. His image of himself had improved since entering the University and finding a goal at last, although he regretted wasting his life which seemed to have previously been without aim. He has never read for pleasure, and claimed to have read only three books in his life.

Current Difficulties The main reason for seeking assessment was to understand his difficulties with reading and spelling. He was also interested in finding out if speech therapy could be of help, although his speech was distinct, but he complained of problems 'thinking out' words before using them. When writing he restricted himself to those he thought he could spell and used a spelling dictionary. He still feels the need to be involved in a discussion in order to understand; he would like to have his intelligence recognised and to be better informed. He has avoided holding Club posts and reading or writing in public. Difficulties in studying are frequently associated with misreading forms or words in poetry.

Strategies The strategies adopted by this subject have been mainly associated with written language difficulties. Problems in selecting words which he can spell with which to express his views have made course work a more time consuming task which is protracted further when using a dictionary. He felt he had been forced to get most of his information from the spoken words, he played an active (possibly dominant) role in discussions, and listened to the radio a lot. As a form of defence against criticism, he had adopted a 'bloody-minded' approach to written work where once written the problem became the Tutor's in reading and marking the

script.

Vocational Interests Although his working life had been in the building and construction industry, this was not reflected in his profile on the Thurston Interest Schedule. His main interests were found to be in Linguistic or Musical spheres - an interesting contrast to his everyday difficulties with specific learning difficulties and inability to read music. (It is interesting to note that when his 16PF scores were compared with the patterns associated with different occupations, his scores were similar to those in the creative, self-expressive occupations.)

Personality As reported in the chapter on Personality, it is possible to obtain a comprehensive computer analysis of an individual's 16PF scores. Such an analysis was carried out on this subject's scores and is included in the appendix. The Second Order factors reveal a higher than average score (8.5) on the measure of Extroversion, reflecting high scores on measures of assertiveness, social boldness and an impulsively lively attitude. His score in terms of Anxiety (7.3) was above average reflecting a tendency to be tense, rather apprehensive yet careless of protocol. The score of 7.6 on the measure of Tough Poise was also above average. This reflects his scores suggesting he was rather assertive, impulsive, venturesome and uninhibited. His highest score was on the measure of Independence (10.0). This was influenced by scores indicating the dominant aspect of his nature with high spontaneity, imagination and the high score on free-thinking (Q_1) which was found to be common among dyslexic subjects.

Seen from Both Sides

There are relatively few 'first hand' accounts written by.

adults who still experience Specific Learning Difficulties. No examples were found in the literature dealing with the case of an adult for whom details from a full psychometric assessment were available together with a first-hand account of his experiences in earlier life. The following report summarises the findings from one such case who, following the assessment, was able to supply the draft and final copy of the story of his earlier life which is reproduced immediately after the case study.

The Assessment

Subject:	Male
Age:	24
Status:	Single, living at home
I.Q.:	Above average intelligence
Resident:	East Anglia
Occupation:	Stonemason

This particular subject was of particular interest since the Open University computer records indicated him as having a dyslexic type difficulty but being in the process of withdrawing from his course. When contacted he was eager to participate although he complained that the University staff had been unsympathetic to the extent that he felt forced to withdraw from a multi-disciplinary Foundation Course in the Arts.

Childhood This subject was born into a family which already had a history of dyslexia on his mother's side. There were no difficulties surrounding his birth, but he reports being late in learning to walk, talk and read. He was consistently dexteral, and could repeat the months of the year easily in either direction. When asked to repeat polysyllabic words he experienced difficulty with half of them. He did not experience difficulty with left-right orientation.

School He started school at the age of 5 years attending a local state school with the majority of his secondary schooling being in an independent school. He sat, but failed, the 11-plus exam, and received additional instruction in English at the private school. He reported being made to feel a freak throughout school and left at the age of 16 years without taking any exams and with a very poor opinion of his own abilities. His parents had been very supportive since they had recognised his problems at the age of 8 years old. His mother, who was a teacher, read to him and he got much of his information from radio or T.V.

Vocational The major influence in his choice of jobs was to avoid those which would require written language skills. Initially he applied to be a Carpenter, but changed to a Stone Yard since he preferred working independently. During his apprenticeship he became a 'strong Union man' and was particularly concerned with Health and Safety issues. Written language problems are still a major difficulty at work, preventing promotion and meaning that he has to take written work home to get it checked.

Educational Questioning revealed that he had in fact completed some studies since school. After two additional years of private tuition and the concession of using a scribe in the examination, he passed GCE 'O' level English at the age of 18 years. During his apprenticeship he took a non-examination course in Bricklaying in the local Technical College. Having two sisters in the Open University encouraged this subject to enrol. Unfortunately, he found the tutors to be 'unaware' of his problems and 'ignorant' of any concessions that might be open to him. Unanswered letters and conflicting

advice caused him concern. He resorted to having his Tutor Marked Assignments retyped, but decided to give up his studies since his tutor said he 'didn't know what dyslexia was' and this subject was fearful of sitting written examinations in unsympathetic conditions.

Self-image He admitted that he still felt himself to be a failure. His writing and spelling problems had affected his education, vocation and social life. He had to rely heavily upon the Secretary of any Committee he is involved with, and if possible borrowed notes from other people. His language abilities varied considerably from day to day, and were affected by tiredness, stress, when being observed or in examinations.

Current Difficulties Spelling difficulties continue to be a major problem, forcing him to take work home, preventing him writing to acquaintances, and making note taking so difficult that he has to rely upon others. He continues to get most of his information from tapes or radio broadcasts.

Strategies When studying he tried taping Tutorials and broadcast information, but found that he still had to rely mainly on his memory. Whenever possible he uses a typewriter or, if possible, the services of an audio-typist. He attempts to avoid recognition as being dyslexic but will admit to a difficulty if challenged. He found having a 'scribe' in an examination a great help.

Vocational Interests On the Thurston Interest Schedule this subject had an unusual pattern. He only scored on four out of the ten categories, and then at a low level. His interest in the Arts was slightly higher than in Biological Sciences, which in turn was higher than his interest in Languages or

executive spheres.

Personality This individual had a score suggestive of a slight extrovert personality (6.0) although he describes himself as a 'loner'. This is mainly a reflection of a tendency to be socially bold, uninhibited and untroubled. His low score (3.6) on the measure of Anxiety reflects his uninhibited ways, self-assurance and relaxed approach. On the measure of Tough Poise he achieved a low score (3.3) because of his tender-minded attitude, warmhearted and happy-go-lucky approach. Only on the measure of Independence was there a significantly high score of 9.3. Major factors were an imaginative approach and rather stubborn attitude. Possibly because he is self-assured, the experimental or free-thinking approach was a major factor (score of 10 on Q_1) which was often found to be high among adult dyslexics in this study.

THE PAPER JUNGLE

"The story that I am about to tell is about my experiences as a dyslexic and the way I was treated throughout my eleven years of compulsory schooling which were to me a waste of time and effort and gave me a fear and built-in mistrust of any teachers. I have decided to call this study the Paper Jungle because learning to read and write was an impenetrable jungle of words and paper to me.

Forest of Words

I started school at the age of five like any other child, whereupon I started to learn my alphabet. Whereas a normal child learned it fairly easily, I did not. Not that I didn't know all my letters, but it was the order in which they came after the letter 'E', and this problem was not to be solved until I was fourteen years old.

My teachers at primary school, with the exception of two, regarded me as a very lazy boy, the fool and the dunce, the idiot, you name it, I was called it, being picked upon all the time just made me withdraw out of the class, not saying anything unless asked. When asked to read I did everything possible not to, because the teachers only used to make me look more of a fool than I really was. This led to a gradual whittling away of my self-confidence, all the time I was under pressure from within myself to prove them all wrong.

As a child of seven I had not made any progress with reading and writing, more and more I was to find myself alone, school was becoming a dark satanic mill, a place of horror and unhappiness. I would do anything to stay away from it as there were no friendly faces there. My support came from my family, without their faith in me I don't think I would have survived at all. This meant that by the age of eleven I was unable to read a very simple book suitable for a five year old.

Jungle of Nightmares

At the age of eleven, the sense of frustration, disillusionment and failure just overwhelmed me, the inability to transfer my thoughts and ideas on to paper at least into any intelligible form which other people could understand, made me feel like a prisoner locked up in my mind, the more I tried the worse it got.

The secondary part of my education was spent in one State secondary modern school for only four weeks. Thank God the remainder of the time was in two private establishments. The time spent in the secondary modern school is best forgotten - it was spent in a 'D' form, no prizes for guessing what it was like. I was with people who could not spell their own names through no fault of their own, a few were supposed to be like me but were less fortunate due to the fact that their parents were less able to help them, the rest were just plain simple. The teachers treated us like mindless morons, this situation made me feel very frustrated. I hated the fact that I had ever been born, thank God I had to stay for only four weeks, then I went to the Shrubbery School where I spent four years.

My time at the Shrubbery was not bad or good, and though the pressure that I was under was relieved once in a while, the frustration was a constant build up all the time, and I was not getting anywhere at all. My writing and reading only seemed to be getting worse, however hard I tried. They even gave me extra help with my English, this involved learning a long list of spellings and having tests the next day, but this was no good to me because I could rarely remember six out of twenty words and probably only one by the end of the week. This made me feel doomed with no way out.

My relationship with the teachers was one of mistrust, some were a little sympathetic towards me, others tried to hammer me into the ground, there was no mercy.

I had no friends while I was at school, though I always tried to help others when they were in trouble. They would always come to me alone with their problems because girls and boys did not want to be associated with the idiot of the form and this meant that my free time was spent on my

own. I was always trying to think how I might get out of this situation. My headmaster gave me tasks inside the school where common sense was needed, such as a Form Captain and Prefect whenever he could. The teachers could not understand me because I would talk quite well on most subjects, but was unable to transfer my thoughts to paper. The sense of being totally alone, unable to communicate in any intelligible written words was to make me a prisoner in my own mind. There seemed to be no way out, I thought that I was to be locked up for ever, this was to be my jungle of nightmares.

At the age of fourteen I was finally told - no, you are not mad, thick or stupid, you are word blind. You have a seeing disability which is hidden, but really you are quite bright. I could not believe it! Could it be true! Could it be that because I had been ill as a baby I had suffered a blindness to words but not to the world. Slowly, I found a path through this nightmare jungle. The path was to be long and hard and often disappointing and crushing. I was allowed by the headmaster to go to a special teacher and after the first lesson I could remember the alphabet which for six years had eluded me. Slowly, but surely, the nightmare became a jigsaw puzzle and began to fit together. The work was hard but for the first time in my life written words made sense. Before this point in time, I had to rely on the school documentary programmes shown on television, or books that were read to me at home for my education. I am blessed with a good memory for facts and dates and I used to store these up in my mind to help relieve the blankness that school produced. Trouble again reared its ugly head when to my dismay my wonderful teacher moved away. Again, I had to find an understanding specialist who had to start again with a different way and manner.

During this time my parents, feeling that a more adult establishment would benefit me as I was now a very big person, over six feet tall and feeling out of place in a school environment, decided to send me to a private educational centre for all types and nationalities. Here I was again allowed to continue with my own specialist teacher in English while studying History, English Literature, Technical Drawing and Maths. I did all this work with the help of a tape recorder. Working with a tape recorder is alright if you have plenty of time in which to do the work. Planning your essay is difficult because you are always dividing your attention between the work and the recorder and this is distracting and makes it difficult to dictate fluently. If the recording is not fluent the sense of the words may be lost due to breaks at the wrong moments. Under exam conditions when you are nervous as well as being distracted by the mechanics of the recorder, it is almost impossible to be fluent in your dictating.

There is another way - you can sometimes use a scribe. This is a totally new system of working. For me this system was much simpler and more relaxing because the speed of dictation does not matter, you can pause to collect your thoughts and to recap as you progress. The scribe became my eyes and hands and through her my words and thoughts could be easily transcribed onto paper. Having a scribe is a complete breakthrough. At sixteen, plans for me to take my 'O' levels and 'A' levels fell through and I was back to square one. I had now to decide what to do next. I had the choice of staying on at school for another few years and maybe getting my exams sometime in the future, or leaving school and going to work. I decided to work. I got an apprenticeship as a stonemason and continued to study with a private tutor in my spare time, I felt this would eventually get me the chance of taking English 'O' level at least. For two more years I struggled on and then my tutor managed, with the help of a neurologist and the headmaster of a local village college, to persuade the Board to allow me to have a scribe and one very hot June day I took my English 'O' level and passed. The Board allowed me extra time but I didn't need it. I believe I was the first person to have my scribe written work passed. Now the battle is over and people with my disability can use this method to take their exams. I do not know what the future holds, perhaps one day people like me will receive help as soon as they go to school and will not have to rely on scribes or recorders to do their work. This can only happen if teachers are taught to recognise the wordblind at once and help is provided, then it will solve the problem before it is insolvable."

Case Studies by Dyslexic Adults

"The L.D. adult would like to be recognised as having a vital role in, and a strategy for, solving many problems associated with learning difficulties. For a lifetime they have been struggling to put the pieces together to survive ... who could offer more guidance than those who have walked the first mile?"

Johnson (1981).

There is overwhelming evidence that specific learning difficulties do continue into, and throughout adult life (REHAB 1974, Kline & Kline 1975, Forell 1976, Gottesman 1979, Cruickshank et al 1980). The most persistent form of difficulty is associated with spelling (Orton 1931, Hallgren 1950, Newby 1969). Some writers believe the underlying

cause to be due to a 'disorder' in thought processes (Smith 1978), other studies suggest that failure to adopt a structured approach to learning may in itself be a partial cause. Ackerman et al (1977a) felt a major factor was that "they have not learnt how to learn". The importance for the adult dyslexic in adopting appropriate learning strategies was pointed out by Donahue (1979):

"People must recognise that dyslexia cannot be cured. The dyslexic must learn how he operates and set about learning in the way that is more direct for him ... to know how to learn in a way that is fruitful instead of frustrating."

The approach adopted by the dyslexic adult is going to vary according to the individual's intrinsic and extrinsic needs. Fisher (1969) suggested that the learning styles of individuals seem to be seriously affected by their personality. Motivation is accepted as a major factor in educational studies; surprisingly, Bain (1982) reports that among adults with specific learning difficulties, the motivation to acquire basic skills is not significantly diminished despite their earlier experiences. This is fortunate since Fisher (1969) while advocating academic counselling, concludes "persistence in pursuing educational goals can by itself and with counselling, help adults to reach their ultimate goal". Johnson (1981) saw advantages in 'self-help' groups which might "collect and disseminate the experiences and perceptions of L.D. adults", and gives as an example the teaching of cognitive styles to match the demands of a given situation. The inability to adapt compensatory techniques to changing situations has been advanced by writers such as Rudel (1981) as a reason for not teaching such techniques. It is argued here that such techniques need to be taught, or at least discussed, if the individual is to cope with the literacy demands

of adult life or an academic course. In adult life the environmental and vocational demands for language tend to increase. In some cases the demands of reading may become more task specific or technical, with a more precise style and requiring a specialised vocabulary. This is particularly true in the case of a young adult who intends to pursue a vocation which requires an academic qualification. Reading, writing and mathematical requirements are different in vocational and educational settings (Aune & Gray 1983). Writing on the job is often structured and repetitive, whereas in education it can be creative and expository. Work related mathematics requires application to the task in hand rather than solving previously prepared problems. Moe et al (1980) found the majority of reading on the job is "to do rather than to learn", i.e. a worker's purpose in reading is to acquire information needed to accomplish a task, while a student's purpose is to remember information for a test. Thus, even though the adult makes significant gains, the environment typically demands a different, or higher, level of vocabulary and a more precise sentence structure (Johnson 1980, Gottfredson et al 1983).

Published first hand accounts of coping with dyslexia in adult life are comparatively scarce. Only one British and one American autobiography in book form have been published. In Britain the actress Susan Hampshire is an outspoken supporter of the dyslexic cause. She describes (Hampshire 1981) her childhood and the early reading difficulties which have continued to bedevil her professional career, making learning scripts an arduous task, and seemingly simple tasks such as 'thank you' letters a virtual impossibility. Describing her continuing battle, she refers to 'bad days' when

many of her hard-won skills desert her, the problems of using a dictionary when the misunderstanding involves the first few letters, this echoes the reports from many other dyslexics. Courageously she speaks of her early difficulties, the difficulty of learning her parts and with the convoluted language of Shakespeare. How her problems have left a deep-rooted sense of "inferiority and frustration". A similar theme is present in the American account by Simpson (1980) of her account of victory over dyslexia:-

"Since there is no cure for dyslexia, when I say that I was willing to think of myself as 'cured', what I mean is not that I was, or am, symptom free, but that my symptoms are manageable - at least on good days. On good days I spell reasonably well. Words I'm uncertain about I can find in the dictionary without difficulty (it is on words I think I know how to spell that I'm likely to be tripped up). I have not advanced so far that I would think of playing a word game such as Scrabble ... spelling remains hard work - such hard work that I am an untrustworthy proof reader of my own copy. As a reader of maps, I leave much to be desired. Employing digits, whether in conversation, dialling telephone numbers, or doing accounts, I make errors caused by transpositions ... I have never learnt to read and eat at the same time, as during solitary meals I've wished I could do. Nor can I attend to two competing sounds - even on good days.

On bad days, which are brought on by fatigue, strong preoccupations, illness and what else I don't know because I sometimes can't pinpoint the cause, I have little confidence in my ability to spell. The dictionary proves useless because I can't think of the opening letter or syllable that will help me find the word I want. I write down an approximation of the spelling, and the following day, if it's a good day, I can correct it with ease.

Taking notes is as troublesome as it was in my freshman year in college. If the notes are important, I retype them as soon as I can, trying to unscramble them. In conversation I say one thing when I mean to say another, and am usually unaware of having done so. What I am aware of is the blocking that on occasions makes it impossible for me to find a word I want. On bad days my directional guide is so completely out-of-order that I walk blocks to the north when I want to go south.

My memory for proper names is so treacherous that I have an acute awareness of what it must be like, at least in this regard, to be senile. Numbers become scrambled so that I mis-dial, mis-address and mis-calculate ... in reading I have the old trouble - I reach the last sentence of the article and haven't the slightest idea of what preceded it.

Only recently, while writing this book and working through the relapse brought on by it, did it occur to me that each new step is nothing more than a temporary resting place. A new dissatisfaction, coupled with a spur of energy, will drive me on to yet another stage in the unending striving to be cured."

Despite the early Anonymous (1936) report on "experiences of a sufferer from word-blindness", only six published autobiographies by dyslexic adults were identified in Britain, and they are generally articles rather than books or case studies. In 1969, Tom May wrote an account of his successful struggle to overcome his literacy problems and take a degree in sociology, despite having been thought to be ESN while at school. Difficulty in obtaining a place on a teacher training course, and the adverse comments which led him to conclude "our society is not tolerant of dyslexics". Fox (1980) wrote of his difficulties in passing GCE examinations in order to go on to college, and of his relief in discovering the nature of his learning difficulty:-

"So much frustration had been caused up until then by working hard and then gaining no success in exams. The school and my parents saw this discrepancy but could not explain it. The report helped a lot of people to realise where the difficulty lay ... looking back at my school life I can now see the problems these dyslexic-type language problems caused and how I managed to overcome them."

Loftus-Brigham (1983) wrote of her parents' fears that she was "not all there", and how these were confirmed when a family friend told her parents that "they should face the fact that they would have to keep me for the rest of my life".

Not surprisingly, a recurring element in most studies is the relief gained from assessment and a clearer understanding of the nature and cause of the learning difficulties (Gauntlett 1978, Westwood 1977).

Hardie (1979) wrote:-

"Strange as it may seem, the day I walked out of a London hospital having been confirmed as a congenital dyslexic, was one of the happiest days of my life ... dyslexia isn't an illness ... it isn't something from which you make a recovery, it's a disability you learn to live with."

In four unpublished British autobiographies collected during the course of this study, the recurring theme of frustration with a pervasive language difficulty is evident, as is their relief when assessed. (Robertson 1980, Parker 1979, Atterton 1980, Thomson 1984). The single most important adjustment in the life of the dyslexic adult is his or her acceptance that they suffer from a specific language learning difference which is not due to impaired intellect. Without such acceptance, it is probable that the secondary emotional problems which accompany some cases of dyslexia may continue and themselves become the dominant problem (Cheyne 1976, Miller 1973, Philpott 1977, Kline 1978, Eisenberg 1975).

Case Studies of Dyslexic Adults

"A sizeable percentage of children categorised as dyslexic, often said to have weaker left hemisphere but stronger right hemisphere potentials, require special remediation and compensatory programs. Unfortunately, it is only the minority who have been able to develop their creativity ... for every dyslexic scientist there are thousands of illiterate, handicapped and disabled persons who are managing only to survive in a society of advanced science and technology. For every dyslexic managing to make ends meet in our deteriorating economy, thousands of adolescents and adult dyslexics are added to

juvenile delinquency roles and to prison populations. For every dyslexic enjoying emotional freedom, there are countless others going through life each with an albatross around his or her neck."

Pollack & Branden 1982.

In 1969 the British Council for Rehabilitation of the Disabled (REHAB) set up a working party to investigate the needs of the dyslexic adult. In her article entitled "The Dyslexic Adult" (Pammenter 1970), she described some of the diverse cases which had been brought to the Council's attention, and which in turn led to the Kershaw Report (1974) "People with Dyslexia". While describing some of the cases referred to the University of Miami Reading Clinic, Carner (1971) suggests:-

"While each is a unique individual, there are many ways in which they are similar. Upon meeting them no one would guess that magazines, books, notes, letters, road signs - every communication through the printed word - constitutes an unfathomable mystery. Perhaps the sceptics would be a little more open-minded about the existence of such a problem as dyslexia if they had to work with the cases on a more than casual basis ... it becomes apparent that the adult dyslexic is an individual who has been hurt by his school experiences. He is often resentful of those who might help him but who at the same time serve as painful reminders of the past. If nothing succeeds like success, then nothing fails like failure. Many dyslexics are defensive about their problem and have very ambivalent feelings about getting involved again."

Graff (1967 & 1979) described the quest for literacy by one highly motivated young man and listed many of the teaching aids then available. Hayes (1967) supports the suggestion that motivation is a major factor, quoting the story of a girl who would not marry her fiance until he learnt to read. Unfortunately, such stories don't always have a happy ending; the writer recalls the case of a nurse who having had a breakdown refused to marry her fiance on the grounds that

he was dyslexic and therefore would be unlikely to be able to help her with her emotional problems. Another young couple parted when she discovered he was dyslexic; in another case a pregnant young wife was distraught when she learnt that her husband was dyslexic and that there was a familial history of language learning difficulties which might affect her child.

Concerned parents often find consolation in accounts such as those of Clark (1973) or Auger (1981). Rawson's (1969) account of one young man's struggle to University, as seen through letters from his mother, might raise questions about the value of academic achievement if it is such a struggle for the individual and the close family. For some individuals 'education can become a monkey on their back', but as Rawson points out, single minded devotion to education may need a longer term, or more detached, perspective to be evaluated accurately.

As in Rawson's account, Kline's (1969) subject was also a competent athlete, who despite an IQ of 146, had been described as being 'slow'. His feelings of inferiority were so profound that he avoided "getting serious with the kind of girl he would like to marry because he wouldn't be good enough for her with his educational deficit". Having been advised to seek long-term psychoanalytic therapy, he was fortunate enough to be carefully evaluated and subsequently received language therapy which enabled him not only to overcome his problem, but achieve academic success.

For many adults, their difficulties are at a functional level - inability to remember phone numbers, difficulty reading notes, or even writing cheques and signing their

own name. One such case formed the basis of Robinson's (1969) study. The problem first came to light when the wife of a twenty-five year old man wrote seeking help. His inability to read or write had caused problems in his achieving a personal identity, self-respect or confidence. Despite a long family history and other telltale signs, he had been thought to be a 'slow learner' and developed an inferiority complex and rebellious personality.

"The one big worry he had was what would his children think when they found out that their Daddy couldn't read."

With remedial help, the outcome was a success story in both educational and human terms. This view as to the importance of both emotional and educational objectives is echoed in Bright (1970) who advocated a combined approach using treatment and effective teaching to rebuild self-confidence and self-esteem.

Rak (1972a) presented details of a case where the subject, a 42 year old man, needed to learn to read and write to pass an examination bar to promotion. Despite a profound disability he was highly motivated to learn. He used a tape recorder in his lessons, made up mnemonic devices for learning vowels; found motivation in learning to read a map and fill in essential forms. Wiig (1972) provided three case studies which illustrated the claim that students may be helped by aids such as:-

- a) taping lectures,
- b) using someone else to take notes,
- c) programmed or self-pacing instruction,
- d) oral or taped examinations,
- e) using recorded texts and books for the blind.

In a Seminar chaired by Rak (1972b) a realistic note is

found in the reference to the elements needed for a satisfactory teaching situation for adults. All too often, studies report only successful intervention strategies or deal with the special needs of special groups such as dyslexic students. This may reflect the fissure which Bright (1970) identified between assessment and the educational provision. Such lack of communication which is often reported between teacher and psychologist, can mean that both feel their own contribution is less satisfying. It may also mean that without feed-back, procedures are not modified and help may not be as client-orientated as it should be.

Among the longitudinal case studies reported by McClelland (1973) are interesting examples of adults who had developed "great powers of evasion". A form of behaviour modification programme was agreed with both parties signing a 'contract', involving a commitment. Survival as a non-reader was possible for one subject since the driving test had been oral, girlfriends had read menus for him and he had developed the technique of listening for, rather than reading, information. The successful subject in Rawson's (1973) case study had worked hard at school and deliberately used the techniques he learnt in therapy. He chose less demanding linguistic courses at college and involved the help of his wife in proof-reading all his papers. In Clarke (1973), a mother recalls her son's struggles to overcome dyslexia, giving an insight into the effect on the family and individual. The book follows Michael into adulthood and reviews the educational help and research then available. An anonymous letter from Czechoslovakia (Matejcek 1973) was printed in the same Orton Society Bulletin as an example showing that 'it's the same

the whole world over'. It described the experiences and strategies developed by a highly successful academic. The letter concluded:- "forgive my anonymity, but perhaps you realise that 'a hunchback does not like showing his hump'."

An Australian case history was also published in 1972 by Jackson. In this detailed study, the test results are contrasted with Don's own perception of his disability. Like Hampshire (1981) and Simpson (1980), he reported reading and spelling as being his weakest areas, and experienced 'good and bad days', commenting:- "Sometimes I can read, sometimes I can't."

A panel of four dyslexic adults discussed their experiences (Phillip et al 1974). This panel expressed concern as to the slow progress that had been made in influencing the caring professions. There was sympathy for the view that dyslexics should be used to help dyslexics. The main key being to help the dyslexic to understand himself, giving details of what he could do, what he will have trouble doing, and how to do it. The point was made that in addition to support from their family, educational assistance should include advice regarding compensatory programs. Thompson (1974) recounts that for a medical student the turning point had also been receiving a clear explanation as to the nature of his disability. He reported that the explanation itself had been of as much help as had all the remedial tutoring: "before that he had been 'in the dark'. He had felt frustrated and inferior, but when he came to understand the problem he could cope with it in the open."

In Steingard and 'Gail' (1975), Gail is described as an intelligent 30 year old woman who was super-sensitive and

emotionally scarred by her experiences. In two sentences she seems to sum up much of the disappointment and dejection the confused student feels:-

"I would see my mother sitting crying & I knew I had hurt her ... I worked so hard & got no where, I was told it was my fault. These children need encouragement & understanding they cannot understand what they are doing wrong, to them it looks fine & makes total sense."

In a personal account, Strauss (1978) recalled his childhood problems and makes a special plea that:-

"it is important for people with dyslexia to understand at an early age. They must have explained to them what their problem is and its got to be explained in a way that they can understand ... had I known myself, had I not had the problem of wondering why I couldn't compete with the kids next to me, why I couldn't answer the questions they could answer, couldn't make the grades they could make, and couldn't achieve scholastically like them - had I understood all this, then I believe I would not have had so many disciplinary problems."

The REHAB report "People with Dyslexia" (1974) includes several short case studies to illustrate their conclusions. These are particularly valuable since they illustrate the diverse needs of adults and strategies adopted which enable them to function in their chosen field. Among the Report's conclusions regarding the dyslexic in the community, were the suggestions that:-

44. There should be exploration of the possibility of the use of 'aids' for the dyslexic, and that the dyslexic be given help and training in their use.
45. That all possible steps be taken to educate the public in the problems which beset the dyslexic, to the end that they may receive more understanding, tolerance and positive help.

Louise Baker's (1975) story provides an insight into the individual's sense of confused isolation while growing up with an undiagnosed disability. Fortunately, her abilities

in sport and in drama led to her developing learning strategies such as using a tape recorder and later to a diagnosis at University (Rawson 1982).

"I soon realised that this is something I must learn to live with, not fight against. But most of all, I realised that I didn't have to be ashamed of being me anymore."

In Gail's story (Steingard & 'Gail' 1975), she refers to the unhappiness which drove her to attempt suicide.

Unfortunately, many adults have experiences which are similarly black, and bear little relation to the favoured individuals described by Rawson (1977). Kline (1978) described the tragic case of an adolescent's suicide:-

"The cruelty of underachievement viciously drains the very essence of being."

Using an illustrative case study, Kline (1978) records the unbearable tension and anxiety, each sentence she wrote in an essay was tortured effort, and her spelling so poor she had difficulty using a dictionary. Robin's story (Jones 1978) was his mother's account of her son's life up to the time he committed suicide, the background of dismay and disillusionment that preceded it. Osman (1979) also wrote from the perspective of a mother, but in a story with a happier outcome. Nevertheless, she contends that:-

"Learning differences don't suddenly disappear, they frequently leave scars and residual problems which remain even into adult life ... little is known about the adults in our society for whom learning was a struggle and there are no precedents for others to follow."

Summary

The essential theme derived from these case studies is that dyslexic adults continue to be faced with very real problems on a day to day basis. The fundamental problem

that a dyslexic person faces is how to counteract the effect of their disability, "They do not get over a learning disability, but rather they learn how to compensate for it" (Burka 1983). Many cases quoted have developed ingenious compensatory strategies which enable them to cope. In interviews conducted by Rome & Osman (1977) the subjects identify what might best be described as 'avoidance strategies' which they developed to prevent their difficulties being detected even in the face of continuing adversity. In Critchley & Critchley (1978) the description of the 'ex-dyslexic' is too generalised to be used as the basis of judgments about the experiences of most dyslexic adults. The majority of studies have reported that there is a need for early identification and a clear explanation of the implications to the individual. The studies reviewed here have dealt with most aspects of the adult experience, the 'good' (successful), the 'bad' (delinquent) and the 'less fortunate' (suicidal). There still remain unanswered questions about the long term prognosis, and whether strategies which enable the individual to cope are as valuable as remedial language therapy. The case studies from this research and those reported elsewhere, support the claim that a specific learning difficulty affects the individual's self-esteem, education, vocational choice, pattern of social behaviour and even personality. Miller (1973) raised the question of those individuals that go unnoticed. The fact that dyslexic children go undetected and grow up to be dyslexic adults is an indictment of the educational system. The more privileged a person is by virtue of intellect or economic position, the better is the prognosis; for those

less fortunate the effect of being disadvantaged is to compound their disability. In a literate society there is a level of expectation that is reflected in education, employment and social interaction. The continuing discovery of dyslexic adults who have been left to master their 'hidden handicap' in isolation is an imputation of society. No case study should finish as Miller's (1973) does, saying:-

"The prospect of another lonely weekend overcame him. He took a bus to another town where some of his old buddies lived and went on a wild binge. Then he disappeared. No-one knows where Donnie is, or if Donnie is anymore."

CHAPTER 12

C O N C L U S I O N S .

CONCLUSIONS

This thesis represents a source of previously unavailable information about dyslexic adults and in particular dyslexic adults who chose to return to formal education as mature students. Previous research has concentrated upon children with specific learning difficulties and regrettably there has been little investigation of the extent to which it affects adult life. Snyder and Mortimer (1969) raised relevant questions when they wrote:-

"The natural history of dyslexia has not been documented. Does it improve spontaneously? With remedial help can dyslexic children improve until their skills approach normal or is that an unrealistic goal? Is being disabled in reading incompatible with success as a wage earner or housewife?"

Similar concern was expressed by Critchley (1964) Herjanic & Penick (1972) and Frauenheim (1975). The Kershaw Report (1974) called for further research to be undertaken into the problems faced by dyslexic adults as did a report produced by Hales (1976) which was concerned with dyslexic adults entering higher education.

The thirty subjects in this study were drawn at random from among mature students engaged in the three forms of tertiary education in Britain, Further Education, Higher Education and Universities. The individuals thus selected are not necessarily representative of all dyslexic adults since dyslexia is only one facet of any individuals abilities. In an attempt to place these findings in perspective case studies are included as well as the analysis of group results.

The criteria for inclusion in the study was that the subject should be:-

- a) Over 21 years old.
- b) Have a Specific Learning Difficulty (Dyslexia).
- c) Currently pursuing a course in tertiary education.
- d) Prepared to undergo psychological assessment.
- e) Complete a vocational interest and personality questionnaire.

The data obtained is based on 30 subjects, 21 males and 9 females, the mean age for the group was 32.16 years. Since a long term study was not possible in the available time, standardised psychometric instruments were used where possible in order to be able to make meaningful comparisons. The measures used included:-

- A structured personal questionnaire.
- The Wechsler Adult Intelligence Scale.
- The Wide Range Achievement Test.
- The Neale Analysis of Reading Ability.
- The Thurston Vocational Interest Schedule.
- The Cattell 16 PF Personality Test.

The number of adults experiencing dyslexic type difficulties is unknown. The Warnock Report (1978) suggested that some 20% of children might experience some form of 'special educational need' during their school life. However, only 4 - 5% are thought to experience 'specific learning difficulties' or 'dyslexia' (Tansley & Pankurst 1981). Since there is a continuing debate over both the appropriate terms and the criteria for the assessment of specific learning difficulties, the exact number of children and adults affected is unlikely to be agreed upon. The incidence of dyslexia reported in the literature ranges from 2% to 20% (de Hirsch 1963, Critchley 1970). The reluctance of adults to admit that they have a difficulty, even to members of their immediate family (Hayes 1967, Kline 1969, Steingard 1976, Frauenheim 1975) was also

found among the case studies reported in this study.

Sometimes through their efforts to conceal their difficulties the dyslexic adult may mislead others into wrongly attributing the difficulties to other causes such as a lack of motivation or intelligence, Lack of recognition and the individual's attempts to conceal their problems have led the British Dyslexia Association to describe dyslexia as the 'hidden handicap' (BDA 1979)

The Pilot Study which initiated this research was an attempt to follow-up the points raised by the Open University report Hales (1976). The findings were based upon answers from questionnaires completed by 12 adult subjects, (6 male and 6 female), who were involved with the Open University. Their mean age as 35.5 years, 66% had assessed themselves as having dyslexia. The relief at discovering that there was a reason for their difficulties was attributed to the fact that the term dyslexia carries with it the belief that the difficulty is not due to lack of intelligence. This had been a very real fear for 11 out of the 12 subjects who reported difficulties at school ranging from negative comments by teachers to one lady who had been classified as 'educationally sub-normal' on the basis of her spelling difficulties. A significant number reported that language difficulties had affected their choice of career, being forced into practical, scientific or engineering work rather than going to university or studying medicine, which demands high levels of academic achievement. Some reported that the discovery that they were dyslexic had given them the confidence to attempt Open University courses. It was therefore worrying to learn of cases where unsympathetic tutors criticised students without understanding their problems,

one student being told "someone who can't spell should not be awarded a degree" and another advised to give up studying and to seek psychiatric help before re-registering. It was encouraging to learn subsequently that the individuals referred to above had gained degrees.

The Pilot Study had shown that there were dyslexic students in the Open University, but even in this University with its 'open admissions' policy, comparatively little was known about them. A postal survey of British Universities revealed that very few records were kept about dyslexic students, and most universities found it impossible to distinguish between dyslexic students and disabled students in general. The incidence in childhood might suggest that 20% of students might have some form of disability and 5% could be expected to have a specific learning difficulty. This survey revealed that any form of difficulty that might affect educational attainment is a major bar to obtaining a university education. The Open University had the highest ratio of disabled students, but even this was only 4.5%. Sterling University was the most sympathetic conventional university with some 3% of students known to have some level of disability. Where figures were available concerning the admission of students with dyslexic type difficulties, the incidence ranged between 1 to 2.5 per 1,000. The reasons for there being so few dyslexic students was summed up in the reply from one university as being due to "the fact that dyslexia tends to be a bar to academic work

even before admission to the University". Regrettably very few universities had any formal policy towards disabled or dyslexic students on exam concessions or as a guide for admissions tutors. Reporting that cases would be dealt with on their merits, seems to do nothing to resolve the confusion among both potential students and staff. In one case study, the subject reported being accepted into a university, but subsequently being asked to leave because he was dyslexic. He then worked for a while before entering a university known to be more sympathetic. There he found that he was not allowed any more time in examinations, but understood that allowances were made for his spelling difficulties when marking papers. The replies to the questionnaire sent to all universities revealed that different departments within a single university often have different policies; in particular examples were found where students were referred to the medical or educational department for assessment or guidance, but in other universities these departments would not admit a dyslexic student because they feared that dyslexia was an insurmountable barrier to proficiency in that discipline. The only firm conclusion that emerged from such desperate replies was that students would be well advised to get a professional assessment before they approached the university and to show it to all the tutors they came in contact with. The majority of British universities have yet to formulate policies concerning dyslexic students, there are no published guidelines for tutors and/or prospective students concerning the admissions policy, advice on suitable courses, whether examination concessions are allowed and if any support service exists.

From the review of the historical literature, it was concluded that difficulties with written language skills are comparatively recent, only receiving serious consideration during the last 100 years. Early studies had not differentiated between written and spoken language skills, nor was a distinction made between failure to develop skills or their subsequent loss due to injury. The history of dyslexia is inextricably bound up with the study of Aphasia. The earliest report of Aphasia dates from 3,000 B.C. and concerned the loss of speech following a blow to the head. The early reports dealt mainly with the loss of speech which resulted from an insult to the brain. Critchly (1950) points out that before 1800 no clear distinction was made between such diverse clinical symptoms as mental disease, hysteria, faulty articulation and aphasia. The earliest pathological explanation was that aphasia was due to paralysis of the tongue, but where paralysis did not exist recourse was made to global explanations such as a complete or partial loss of memory. Despite published cases of surgical cures for traumatic aphasia in the seventeenth century, the connection between language and localisation of function within the brain was not recognised until the nineteenth century. Failure to differentiate between a loss of speech and the loss of written language skills may in part have been a reflection of the prevailing cultural values in which literacy and education were restricted, being limited to the priveleged social classes and certain professions.

Differentiation between different language disorders was first made during the nineteenth century. Professor Trousseau introduced the term Aphasia in 1864 and this term is now comonly used to describe cases where loss of speech is due to injury to the brain. Two British writers were important at this time, Hughlings Jackson (1868) identified many of the psychological aspects associated with aphasia and Bastian (1869) who was the first person to describe 'word-deafness' and the condition of 'word-blindness'. Through his writings Kaussmaul (1878) sought to distinguish the conditions he described as 'word-deafness' and 'word-blindness' from aphasia, and by doing this he has been credited with introducing the term 'word-blindness' into common use. In 1887, Professor Berlin proposed the term 'dyslexia' to describe cases of adults who he had observed could only read 3 to 5 words. It was not until the last decade of the nineteenth century that Pringle Morgan (1896) and Kerr (1896) recognised that there were 'developmental' forms of written language difficulty in childhood, which could be distinguished from cases where these abilities had been lost as a result of some form of injury to the brain. It is only during the present century that there has been recognition that this condition identified in children could persist into adult life. With the exception of two early studies which received little attention; the existence of dyslexia in adults has only received attention during the last 30 years following the publication of Herman's study (1959).

Since very little work has been undertaken in developing an operational definition of dyslexia in adults, the term is used in this study to describe:-

someone who has a specific language difficulty affecting spelling, reading and other written language skills, characterised by a discrepancy between attainment and intellectual potential and accompanied by evidence of constitutional cognitive difference.

Concern has frequently been expressed about the impact on the lives of illiterate and semi-literate adults (Kershaw 1975, Satz et al 1978, Gottesman 1979). The Bullock Report (1975) noted that:-

"modern society assumes an ability to handle print and the adult who does not possess it can feel vulnerable and alienated."

To reduce the chances of introducing complicating variables into the study potential subjects whose primary difficulties may have been due to emotional or personality disorders were excluded from this study. As predicted by Bullock (1975), many subjects in this study reported a sense of rejection. They report experiencing criticism from their teachers, ridicule by their peers, and the disappointment of their parents; not surprisingly many subjects report having left school with a sense of inadequacy. This sense of failure may be heightened because the learning difficulty occurs despite adequate intelligence, the individuals being painfully aware that they had been unable to acquire the skills of reading and spelling that their peers have achieved. This was compounded as most subjects report being aware that they have failed to learn the skills others possess, but few received any counselling or a clear explanation of why they have failed. One advantage of the insistence in this study is that subjects underwent a

full psychological assessment which provided the subjects with feedback on their performance and a chance to discuss their difficulties openly. All the subjects reported that the experience was valuable in helping them understand their difficulties and that it served to allay some of their fears. This was felt to be particularly worthwhile since the majority of adults are unlikely to receive any further help during their adult lives.

The main aim of the structured interview was to discover to what extent the subjects have been and still are affected by dyslexia in their daily life. To do this information was sought upon seven important aspects of their lives:-

childhood/background, school and academic attainment, occupation, self-esteem, social factors, methods of coping and the attitudes of 'significant others'. The majority of subjects reported their initial problem was learning to read, most of them could not read by the age of 7 years, but became aware of their difficulties by the age of 9 years. This awareness is reported to have been related to feelings of inadequacy and anxiety, heightened by not knowing either why they were unable to read or how pervasive the problem was. Although their parents remained supportive, the individuals report starting to feel less capable than their peers and this was supported by school reports that tended to be poor and often critical. This lack of self-esteem reinforced by the negative views held by their teachers meant that the majority of subjects did not even attempt any examinations before leaving school.

An ancient Chinese poet suggested that "the world cheats those who cannot read", but in a modern literate society such a person would be cheated of far more than money. Reading

difficulties could cheat him of his education, limit opportunities for training and deny him access to many sources of information. It is particularly sad that pleasure from literature, poetry and languages are often denied, many subjects felt that their 'quality of life' had been reduced. In this study over 80% of subjects reported that their difficulties had prevented them from involvement in such activities. They also reported that their adult lives have been adversely affected in other aspects, no subjects achieved any pleasure from reading and few subjects read for entertainment, 86% preferring 'live' entertainment to reading. The reports suggested that in adult life the affects of their difficulties were most pronounced in social situations, in particular they avoided any involvement which might require them to read aloud. Fear of failing in front of their peers itself induces tension, Subjects reported that their aversion to reading aloud had prevented them from being secretary to social clubs, reading the lesson in church and reading minutes or reports to groups. This form of 'self-exclusion' arises from the wish to conceal their difficulties from others - in some cases even their spouse. Involvement with drama can be an impossible hurdle to many who are unable to 'read through' a part live and like Susan Hampshire would have to learn it by heart. It is possible for the coach or teacher to seek help in preparing notes and diagrams in advance to avoid writing in public, but in some situations someone else may be able to read instead and the only course open is to virtually learn the material by heart. In the case study of

the clergyman the problem had placed a major barrier between him and his chosen career. His superiors had indicated their lack of confidence due to his difficulty reading spontaneously in the pulpit, hymn numbers or announcements. He had also experienced problems reading unfamiliar forms of services. Most subjects report feeling particularly vulnerable since they experience 'good and bad' days during which their abilities can vary significantly and usually without warning. Many subjects are concerned and embarrassed by this phenomena which can render them incapable of carrying out their normal daily life, since they can find themselves unable to read the usual newspapers or a personal letter and may experience difficulty in writing an address or a cheque. Typing, special dictionaries, audio dictation, computers and the option of spelling correction programs were among the methods reported as helping subjects to cope with written work. For many subjects, their normal difficulties were exaserbated when tired, being observed or under stress, and the majority reported drinking very little alcohol because it might detrimentally affect their hard won skills.

Among the limited, number of longtitudinal and follow-up studies available, there was considerable divergence between their conclusions. This may be due to the undifferentiated nature of the retarded populations studied, the different criteria used in the studies and wide differences in the ages of the populations studied. The majority of studies found that there were a residual affect among adults who had experienced a specific learning difficulty during childhood.

The follow-up studies which sought to evaluate the efficacy of pedagogic intervention recorded that most progress was made in terms of reading skills (Silver & Hagin 1964, Zangwill 1982) but spelling remained the more intransigent problem. The most optimistic studies were those carried out by Robinson & Smith (1962) and Rawson (1968). Rawson op. cit. found the most favourable outcome following a study of a socially, economically and educationally privileged group and this concluded that their occupational and educational status was very similar to that of their fathers. The majority of studies which used measures of occupational status, social adjustment or adult reading skills as their criteria, reported evidence showing long term effects of language learning difficulties, which have a significant residual affect upon the lives of dyslexic adults.

The assessment of dyslexia has been criticised as being a process of "identification by elimination" (Reid 1969). In an attempt to provide a check list of the 'signs' associated with dyslexia the Bangor Dyslexia Test was developed (Miles 1983a, 1983b) and this influenced many of the questions included in the Clinical part of the interview. The ratio of men to women in this study as 2.3:1. 14 subjects (46%) were consistently 'right handed' and only 4 (13%) consistently 'left handed'. Only 1 subject in 3 reported any indication of late development or other problems in infancy or childhood. This contrasted significantly with 75% who reported being unable to read by the age of 7 years. There did seem to be evidence to support the familiar nature of dyslexia with 80%

of subjects reporting that other members of their immediate family had language difficulties. The fact that the Bangor test did not prove to be significant in this study is thought to be because it was developed for use with children and some measures seem to be subject to the influence of maturation and not appropriate to the identification of dyslexic adults. The primary factors contributing to dyslexia are believed to be enduring and persist into adult life since they originate in constitutional psychological differences in processing symbolic information and associated language skills which can be measured with standardised psychometric tests.

The main psychometric measure used in the assessment process was the Wechsler Adult Intelligence Test. It has been argued that where a specific difficulty with written language skills (reading or spelling) occurs, together with a specific psychological profile, it is appropriate to describe this condition as being a Specific Learning Difficulty or Dyslexia.

The main differences in the psychological profile of the adult with Specific Learning Difficulties are the significantly lower scores on the tests of short term auditory and visual memory within the Wechsler Intelligence tests; these depressed scores have become the 'finger print' of the dyslexic individual. This pattern has been described as the ACID profile by (Swartz 1971) and the 'third factor' by (Kaufmann 1979), the same profile has been identified among children and adults with specific learning difficulties. (Ackerman et al 1977a & 1977b, Cordoni 1981, Fraunheim & Hecher 1983). The results in this study confirm these earlier findings in that an analysis of sub-scale scores based upon the tests of Arithmetic, Coding (Digit Symbol), Information and Digit Span does reveal

a significant difference. The most significant factors in this study proved to be the tests of Digit Span (short term auditory memory) and Coding/Digit Symbol (short term visual memory). No significant differences were found between the Verbal, Performance and Full Scale scores either within groups or between groups. There was a significant correlation between the increase in intelligence scores and the increase in age. The standardisation of the WAIS test was carried out by Wechsler (1958) following data reported by Doppelt & Wallace (1955) which indicated a reduction in scores with increasing age. In the light of more recent reports and the discussions in Matarazzo (1976) and Anastasia (1976), it would be interesting to replicate this study using the recently produced WAIS-Revised (1981). The importance of this finding is that it suggests that general intelligence is not constrained by dyslexia in adult life, there is a significant difference between their general intellectual ability and the written language skills, indicating that subjects had been able to continue learning after reaching adulthood, despite their continuing and specific difficulties.

The measurement of reading skills poses a problem in adult life since the variables include the complexity and relevance of the text, the different measures of reading ability that are used and the manner in which the person is asked to read. A measure of silent reading speed and accuracy were thought to be the most realistic and non-threatening measure for use with adults. The test passages from the Neale Analysis were used, on which a 13 year old is expected to read aloud at a

speed of 100 w.p.m., where as the majority of writers suggest that adults read in excess of 250 w.p.m. The criteria used to distinguish between handicapped and normal adult readers was the ability to read silently at 150 w.p.m. with a comprehension score of at least 6 correct answers out of 8 questions. This is a very low level of ability when compared with what most studies would describe as an 'average' adult level, it is also a level at which adult students could be expected to experience considerable difficulty in keeping abreast of the reading expected by academic courses. The distribution of scores indicates that none of the subjects achieved 'normal' adult reading speeds of 250 w.p.m., this suggests that they are all continuing to experience varying levels of difficulty in reading. If the expected adult reading speed had been 200 w.p.m., 90% of subjects would have been identified as continuing to experience reading difficulty. A fast and realistic test of prose reading ability in adults needs to be developed in Britain, preferably with standardised scores on both speed and accuracy.

Regretably few studies have attempted to measure spelling abilities among adults, although there is agreement (Cordoni 1976) that spelling remains the more obdurate problem in adult life. Writing may assume greater importance in adult working life, it certainly has the disadvantage that it is enduring evidence of a difficulty as compared with the transitory nature of the spoken word, where mispronunciation is tolerated to a larger extent. The W.R.A.T. spelling test

was chosen as providing both a Sten score and a standardised score which can be compared with the person's IQ score; a discrepancy of 10 points is thought to be significant ($P = .05$). All subjects were found to have spelling abilities which fell significantly ($P = .01$) below the level expected suggested by their IQ scores. This discrepancy supports the view that spelling difficulties are the main manifestations of dyslexia in adult life. These difficulties are not ameliorated with increasing age and continue to contrast most starkly with the individuals intellectual abilities.

The majority of subjects reported that dyslexic difficulties had affected their career choice; this is not unexpected since during their last years at school the advice from teachers would have been based upon their academic performance and this would have been reflected by parental views as well as influencing the individuals view of what he or she was capable of. The fact that they left school without sitting any examinations which would have been a prerequisite to continue into higher education or most professions, further limited the individual's choice. One such example was the lady who came from a family of medical doctors but had been dissuaded from her ambition of entering medicine after being described as ESN because of her reading problems, she continued with voluntary care work and eventually became a Health Visitor.

On a more mundane level, dyslexic candidates may face problems of filling in application forms and expenses claims, standardised

formats prepared in advance are a help in preparing application forms or providing personal details, but completing claim forms at interviews can be a challenging experience. The dyslexic person also faces the problem of whether to admit to a potential employer that he has a difficulty. Many subjects reported adverse experiences following admission that they had a specific difficulty, this has convinced many adults that to admit a handicap would further depress their employment prospects. Other examples of difficulties in relation to employment were associated with problems in taking telephone messages, writing reports or reading minutes. Several subjects reported that unsympathetic superiors who detected their difficulties had made adverse comments and this had been a factor in preventing promotion. Most of the subjects report having been forced to take jobs which don't really appeal to them and which were not part of a planned career. In some cases these factors had served to depress their subsequent socio-economic attainment.

When subjects were tested using the Thurston Vocational Interest schedule the majority were found to be experiencing stress arising from a discrepancy between their 'ideal' vocation and their 'actual' vocation. This seemed to be due to the constraints which their language difficulties has imposed upon them. The majority of subjects (70%) reported that language difficulties limited their choice of jobs and careers. Only 7 of the 30 subjects had jobs in an occupation they would have liked to work in, the majority felt that they had been

barred from other jobs by their language difficulties or lack of educational qualifications. More than half the subjects reported that one reason for returning to education was the aim of furthering their career. Although the increase in socio-economic positions of subjects correlated with increasing age, the majority were found to be at a socio-economic disadvantage as compared with their fathers. As in Gottfredson et al (1983) dyslexic subjects were found to hold 'intermediate' posts most often in business compared with their fathers who were more often professional men with more educational qualifications. The implication being that business and management may be accessible to the dyslexic despite their lack of formal educational qualifications, although such a post may be as financially rewarding as a professional post, it may not be as satisfying to the individual.

Is there a dyslexic personality?

During the interview subjects were asked to describe their own personalities. 73% felt they were extrovert and that was how friends and acquaintances would describe them. When tested using the Cattell 16 Personality Factor Test and the scores analysed in terms of second order factors, the results support this view that the average adult dyslexic student is an extrovert personality. The problem associated with using second order scores in studying trends in groups was noticeable here since many of the highly significant variations identified on individual traits were lost in the process of calculating second order factors from groups of individual mean scores, these factors were themselves converted to means for the

purpose of comparison and the process produced the effect of tending to regress to the mean for the general population. Among the 16 individual traits measured significant differences ($P .05$) were found indicating above average levels of intelligence, imagination, they were more assertive, venturesome, and expedient. Possibly because of these last two factors, the subjects were also found to be less constrained by self discipline. The most significant deviation was on the measurement of whether they evidenced a conservative or radical and free-thinking approach; on this measure there was a highly significant ($P .001$) score with a very low standard deviation, suggesting that they strongly favoured a free thinking approach to problem solving. This difference was not found in a small sample of subjects who had not experienced a language learning difficulty, which suggests that this may be an important factor in adjustment to learning difficulties. Halitsky (1976) found similar differences in a group of residual dyslexic subjects who showed a significantly enhanced level of cognitive flexibility. No support was found for the suggestion (Spieldberger 1966, Lawson 1971, Thomson 1978, Hogenson 1978 & 1981), that dyslexic adults would be lacking in confidence or experience more anxiety. Most subjects reported having a low opinion of their own abilities at the time when they left school, but despite the fact that only two subjects had received any form of remedial help, the majority reported a higher level of self-esteem when interviewed. Part of this improvement may be due to the support of 'significant others' which seems to have been a positive factor in their decision to return to formal education - although

this is not significantly different to the support shown by their parents attitudes during their school days. There was no agreement as to the extent to which the views of 'significant others' had influenced their decision to return to formal education. 9 out of 10 subjects felt that they had decided to return to education for personal reasons.

The Open University students reported considerably more support from 'significant others' for their decision to return to education than did the students in Higher Education. 3 H.E. subjects reported encountering outright hostility, in one case resulting in divorce. It is not clear whether this was influenced by financial concerns, since full-time education imposes a heavier financial burden than does part-time study which allows students to continue in employment while studying.

Several reasons have been suggested for the fact that fewer adults than children are identified as suffering from dyslexic type difficulties. Critchley (1970) suggested that adults may simply become resigned and merge into the amorphous population of illiterates. This group of mature students has clearly not done that, for despite achieving an element of social and economic adjustment they have chosen to return to formal education. This choice could not have been predicted on the basis of past performance, since they are voluntarily entering a situation where they earlier experienced a level of difficulty which amounts to a 'handicap'. Harris and Buckle (1971) differentiated between a 'disability' as a loss or reduction in a functional ability, whereas a 'handicap' was consequent upon a disability in respect of the environment. In this context, these findings suggest that dyslexia, in

adult life continues at the level of an underlying 'disability' which is accommodated through the individual's choices of his environment, it only becomes a 'handicap' in specific situations.

Some descriptions of dyslexia have implied that the syndrome is due to problems associated with late maturation or a developmental delay. One subject reported having had his difficulties explained to him by his teacher as a developmental problem which he was expected to 'grow out of'. No support was found in this study for the suggestion that dyslexia is linked to a form of development delay, or that there is a spontaneous development of language skills later in life. In all other respects the subjects had a normal pattern of physical, mental, intellectual and emotional development. An example of this might be the ability to deal with complex problems in adult life; the individuals in this study had shown just such maturity by taking in to account the long term and emotional implications of their decision to return to full-time education. The conclusions from this research indicate that dyslexic adults achieve levels of ability and maturity consistent with their age - apart from their continuing and specific difficulties with written language skills.

The most frequent reason given for seeking an assessment was a personal need to understand the nature of their difficulty and in the hope that this insight would help when making decisions about their future. Many subjects felt the second reason for seeking a formal assessment was that it would help in explaining their difficulty to others. Most subjects recognised their limitations although still not resigned to them. Their difficulties had been a major concern when choosing

which educational institution and course to enter. One of the attractions of tertiary education was that the process requires more independent learning and self discipline compared with the approach in schools where the teacher controls the process and sets the standards against which the dyslexic child is judged to have failed. Educating or training adults attempts to involve the individual much more through decision making and participation, the aims being to:

- obtain the individual's commitment to the process
- use methods appropriate to learner's needs
- relate content to agreed objectives.

Despite the subjects' commitment to their courses, they all reported that they were continuing to experience specific difficulties in comparison with their peers. This was particularly noticeable in the case of written work and examinations in comparison with the evidence of ability in tutorials. Difficulty with written work was reported by 83%, note taking 50% and exams 33%. One third of the subjects reported having to spend more time studying than other students. Interestingly many students had developed strategies to help them with their studies. 53% resorted to asking the help of someone who could spell, 43% found typing a help, 25% repeatedly rewrote and corrected essays and a further 25% had adopted efficient learning strategies. Half the subjects reported having sympathetic tutors but there was a great disparity between the attitudes of individual tutors and only 37% of subjects received any concessions in examinations or course work. As a result all but two subjects continued to try to conceal their difficulties.

The affect of format and modality upon the ability of handicapped and normal students to read and recall information contained in a passage of text was the subject of a separate investigation. This revealed that dyslexic students took longer than other students to read a given passage and remembered less information. They did benefit when the passage was presented in more than one modality and although they had to spend more time on it, they were able to achieve higher scores on the measure of recall. In view of these results, suggesting that multi-modal material is the most effective format, it was interesting to note that in the survey the largest single group of students (56%) reported employing notes and diagrams to aid them when studying.

The second investigation had been into the affect that the style of presentation had upon the marks awarded to a script submitted by a subject. Reports from subjects had suggested that a handwritten script which included spelling errors would receive lower marks than a type-written script without errors. Scannell & Marshall (1966) found a significant difference between scripts with and without spelling errors, so in the light of the harsh comments that had been recorded on scripts submitted by subjects, it was suprising to find that higher marks were not awarded to type-written scripts or scripts without spelling errors. The effect of different styles of presentation seems to change the focus of the tutor's comments rather than affect the overall mark awarded. The advantages of having a script corrected and typed may be that the finished article is more aesthetically pleasing and

satisfying to the subject, but did not serve to produce a higher mark. During their studies (43%) of subjects reported finding that typewriting scripts had helped them and a further 26% went to the trouble of correcting and rewriting scripts. It may be that the mechanical advantages of typing are important, or that correcting a script serves as an aid to learning and in themselves sufficient to compensate for the extra time and effort expended without any measurable improvement in the marks awarded by tutors.

Further Research

This study has revealed several areas in which further research could usefully be undertaken. There is a need for more long term follow-up studies (Satz et al 1973-78, Spreen 1978-82 & Fraunheim 1975-83); there seems to be a shortage because these studies require long term funding and are beyond the period allotted to most doctoral studies (Howden 1967).

This study has found that the ACID profile identified in the Wechsler intelligence test scores of dyslexic children can be identified in the scores of adults subjects, further studies (Fraunheim 1983) are necessary using the WAIS-R in an attempt to replicate these findings and to see if there is support for the positive correlation that was found between increasing age and intelligence.

Methods of measuring reading ability vary widely, and there is a need to develop an easily administered measure of silent text reading ability for use with adults. This will need to be developed with norms for the British adult population and a sten scale that would permit comparison with IQ scores.

Further research is required as to the possible benefits of information technology to the dyslexic adult (Hawkrige 1985). Computers are not being extensively used in education, training and industry. The use of computers by dyslexic adults needs further investigation, in assisting the dyslexic person a computer has the potential to be far more than a teaching machine. The use to which the individual will put it will depend upon personal need, for the technology can provide not only keyboard, word-processing and on screen-editing and correction facilities, but also programs offering spelling correction, word count and thesaurus facilities. When writing the individual is already attempting to battle with grammar, syntax and spelling and may not have the ability to remember the large number of commands needed to use a command driven program Willsher (1978). Selection of 'user friendly' programs might, through the use of menus overcome some of the problems of limited short term memory associated with dyslexia. A major use of computers is to store and retrieve information thus enabling the user to significantly reduce the amount of reading necessary, to be more efficient in routine tasks thus leaving more time for interpretation (Hales, in Blackler & Osborne p158).

Many studies have advocated remedial teaching to overcome long term language difficulties. The majority of subjects in this study are not able or prepared to accept this form of help. For such adults a less threatening approach might be through counselling and the development of suitable coping strategies. Further research is needed to identify a range of suitable strategies either in the form of 'good practice'

developed by other dyslexic adults or by developing the efficient learning techniques already advocated by Buzan (1975) & Rowntree (1970 & 1975).

A Summary

The quotation from Snyder & Mortimer (1969) at the start of this chapter commented that the natural history of dyslexia has not been documented. This study has attempted to bring together information about the historical context of the term dyslexia and to review the literature concerning dyslexia in adults. During the last 15 years there have been several published case studies and a limited number of follow-up studies have reported their interim findings. This study investigated a previously ignored population of adults with specific learning difficulties who were currently involved in tertiary education.

One of the main conclusions has been that the condition does not improve spontaneously, the dyslexic child is likely to become a dyslexic adult, experiencing continuing difficulties with written language. He is likely to remain a reluctant reader and with a seriously impaired spelling ability. This is thought to be due to a continuing constitutional difference in the cognitive skills associated with processing symbolic information. For mature students this will necessitate developing methods of 'over learning' possibly using different modalities together with strategies for coping with tasks such

as note taking and the production of written assignments.

The self-esteem of subjects had improved since they left school but many subjects reported feeling vulnerable to criticism on returning to education. The interaction between the dyslexic students and staff in institutions offering tertiary education would be aided if these bodies had policies on the admission and support of dyslexic students.

An important factor in adult life is the opportunity to exercise the right of choice over both their immediate environment and their response pattern. Thus the individual may choose to avoid situations in which his dyslexia might handicap him or enter a specific environment but adopt strategies to conceal his disability. This choice of environment is important in relation to three main aspects of adult life, educational, social and occupational. Language learning difficulties are thought to have been an interactive influence upon the development of the individual's personality. Highly significant test differences were found indicating that the dyslexic adult is intelligent but retains an open mind to problem solving and is capable of producing unorthodox solutions. In order to cope with problems encountered in every-day and academic life examples were found of subjects developing 'Denial' strategies which were predominantly negative and attempted to deny or conceal the existence of a difficulty possibly passing on responsibility to others, of 'Defence' strategies designed to prevent others from discovering that there was a difficulty which included avoiding threatening situations and of 'Coping' strategies which enabled the

individual to function effectively by accommodating the difficulties imposed by the chosen environment.

The degree of difficulty and individual experience did not seem to be related to their present age or whether there had been any intervention earlier in their life. Few subjects had sought remedial help during their adult life and only a minority were prepared to consider this in the future.

Subjects reported that they were constantly aware that they had a disability, but this only took on the magnitude of a handicap in situations which made heavy demands on their written language skills.

Education, social and occupational ambitions have been compromised by subjects because of their specific language problems. The low level of academic achievement at school lead to subjects leaving without the entry qualifications to further education or professional training, they were forced to accept a job they could get rather than the career they wanted. Their difficulties had subsequently adversely affected their social life, personal development and promotion. The majority of subjects were employed in businesses which provided them with socio-economic status below that achieved by their fathers, but seems to have provided them with an opportunity to develop their initiative and managerial qualities. All the subjects reported that formal assessment and a clear explanation of their difficulties had been of benefit to them, for some the realisation that they were dyslexic had become a turning point in their lives; but lack

of understanding by many of the people with whom they come
into contact has meant that the majority must continue to
conceal their difficulty.

A P P E N D I X A

SUMMARY OF 'FOLLOW-UP' STUDIES INTO ADULT LIFE

AUTHOR	LOCATION	NO.	LENGTH OF FOLLOW-UP	MEAN AGE AT FOLLOW-UP	I.Q.	ADULT ASSESSMENT	CONCLUSION
Lantz & Lieber 1943	San Francisco	33	14 years	22	100.3 ¹	Records	Child's inability to respond adequately.
Ellehammer et al 1954	Denmark	72	10-15 yrs.	24	-	Interview	Backward reading extends beyond person's school days.
Herman 1959	Copenhagen	541	5-20 yrs.	15-30	-	Records	Residual defect.
Robinson & Smith 1962	Chicago	44	10 years	17-28	120	Interview & Questionnaire	Can fulfil their occupational ambition.
Carter 1964	Indianapolis	35	10-17 yrs.	19-25	104.6	Interview	Residual effects.
Silver & Hagin 1964/6/7	New York	24	12 years	19	105	Tested	Long term problems.
Balow & Bloquist 1965	Minneapolis	32	10-15 yrs.	20-26	100	Interview and tests	Personality deviancy and lower jobs.
Preston & Yarrington '67	Pennsylvania	50	8 years	15-26	97.6	Interview	Affects education and achievement.
Howden 1967	Oregon	53	19 years	30	106	Interview and tests	Lower educational & occupational status.
Rawson 1968	Pennsylvania	56	8 years	26-40	131.4	Interview	If intelligent succeed in academic & occupational pursuits.
Hardy 1968	Ontario	40	8 years	19	104	Interview and tests	Adequate adjustment, but continuing language difficulties.
Perlo & Rak 1971	Boston	32	3 months			Language Therapy	
Rackham 1972	London	69	unknown	52 at school 17 left sch.		Questionnaire	Sparsc data but optimistic.

CONTD.

SUMMARY OF 'FOLLOW-UP' STUDIES INTO ADULT LIFE

AUTHOR	LOCATION	NO.	LENGTH OF FOLLOW-UP	MEAN AGE AT FOLLOW-UP	I.Q.	ADULT ASSESSMENT	CONCLUSION
Foster 1972	Michigan	33	3-5 yrs.	12-20 m 16	100	Tests and Questionnaire	2/3 functionally literate.
Saunders & Barker 1972	Bristol	7	-	36	75-100	Tests and Interview	They remained highly vulnerable.
REHAB 1974	British report						
Frauenheim 1975	Michigan	40	10 years	18-31 m, 21; 10	94	Tests & Attainment Interview	Adult reading significantly retarded.
Halitsky 1976	New York	50	Survey	13-18	85-130	Cognitive Tests	Cognitive differences between residual and compensated dyslexics.
Zangwill 1982	London	75	10 years	18-30 m 23.30	114	Records Interview	Occupational downward shift, spelling remains a problem.
ACLD	Survey						
Gottfredson, Finucci & Childs 1983	Baltimore	400	4-38 mths.	16-60	118	Records & Questionnaire	Difficulty influences type of job.

REFERRED TO IN THE REVIEW ALTHOUGH MAINLY RELATED TO CHILDREN

Rasmussen & Dunne 1962	Saunders & Barker 1972	Satz, Taylor, Friel & Fletcher 1978
Morris 1966	Yule 1973	Ackerman et al 1977
Kopitz 1971	Kline & Kline 1975	Gottesman 1979
Hinton & Knights 1971	Trites & Fiedorowicz 1976	

A P P E N D I X B

The Open University

TMA FORM

Overall Grade/Score

Tutor's Comments and Advice to Student

Did the student seem to have any difficulty with:-

1. Expressing ideas?	YES	<input type="text"/>	NO	<input type="text"/>
2. Spelling?	YES	<input type="text"/>	NO	<input type="text"/>
3. Comprehension of what the question required?	YES	<input type="text"/>	NO	<input type="text"/>
4. Syntax?	YES	<input type="text"/>	NO	<input type="text"/>
5. Structure of answer?	YES	<input type="text"/>	NO	<input type="text"/>

Did you have any particular difficulties in marking this script?

YES

NO

If yes - what was the difficulty due to?

TUTORS NAME

PLEASE RETURN TO:

Mr D Gauntlett
Survey Research Department
The Open University
Walton Hall
Milton Keynes
MK7 6AA

A P P E N D I X C

ASSESSMENT QUESTIONNAIRE

CLINICAL)

Name _____

Date of Test _____

Address _____

Age _____

Date of Birth _____

Institution _____

Dept/course _____

Occupation _____

If Assessed Before _____

Outcome _____

CHILDHOOD

Birth _____

Major Illnesses/Accidents _____

Talked _____

Walked _____

Family history? _____

Reading _____

Fathers occupation _____

LATERALLY

Dominant eye _____ Handwriting _____ Ball _____

Reference eye _____ Foot _____ Ear _____

MONTHS OF THE YEAR

Forward _____

Backward _____

POLY SYLLABIC WORDS-

Philosophical _____

Preliminary _____

Contemporaneous _____

Anemone _____

Aluminium _____

Statistical _____

ORIENTATION LEFT-RIGHT

Your RIGHT hand _____

Your LEFT ear _____

Touch your RIGHT ear with your LEFT hand _____

Touch my LEFT hand with your RIGHT hand _____

Point to my RIGHT ear with your LEFT hand _____

Touch my RIGHT hand with your RIGHT hand _____

Point to my LEFT ear with your LEFT hand _____

Touch my RIGHT hand with your LEFT hand _____

Special strategies _____

ANY SPECIAL DIFFICULTIES WITH:-

Eye sight Yes ☐

Hearing Yes ☐

Spatial Yes ☐

(SCHOOL)

-2-

Age starting school _____

Age left school _____

Did you sit/pass 11 plus? Yes ☐ No ☐

Did you sit/pass Common Entrance No Fail Pass Private/State education

What schools did you attend (how many) _____

What were the main comments on your school reports?

How did you think your abilities compared with others of the same age?

When did you first realise you had a language difficulty?

Age ☐

What effect did the difficulty have on you then?

What was your parents attitude to your performance at schools?

What exams had you taken when you left school? CSE/GCE/Matric?

Took and failed: _____ Took and passed: _____

(LOCATION)

What was your first job? _____

Why did you choose that? _____

Have you attempted any other academic courses since school? Yes ☐ No ☐

What? _____ What success? _____

Other jobs? _____

What influenced your choice of jobs? _____

Did your use of the language influence your choice/selection of jobs?

Yes ☐ No ☐

Does your language difficulty influence your long term choice of career? Yes ☐ No ☐

If so how? _____

Does your job involve much reading? Yes/No _____

Do you read for entertainment? Yes ☐ No ☐ How many books per month?

Do you prefer to get your information/entertainment from listening, (such as live performances, broadcasts or tapes)?

Yes ☐ No ☐

(SELF IMAGE)

What picture of yourself did you have after leaving school? _____

How has your difficulty influenced you since you left school?

What has been the attitude of those around you since school?

Parents/Spouse

Peers/colleagues

How has your image of your self changed, now you are back in education?

How might your friends/colleagues describe your personality and abilities?

How would you describe your own personality and abilities?

(SOCIAL)

What are your social/leisure interests?

Has your difficulty ever influenced this part of your life-preventing you taking a post like Secretary in a Club etc.?

Yes ☐ No ☐

Do you actively avoid situations that mean reading ALOUD in public i.e. the Church lesson - Committee minutes?

Yes ☐ No ☐

Has your difficulty ever prevented you doing things you wanted to i.e. music, doing languages or poetry?

Yes ☐ No ☐

Does your language performance vary - day to day (good and bad days)? Yes/No

In different circumstances? Yes ☐ No ☐

Such as

- when tired

- with frustrating tasks

- stress

- exams

- being observed

- alcohol (how) _____

What do you hope to get from this Assessment?

EDUCATION)

Why are you back in education? _____

Did your employer/Spouse/parents influence your decision?

Did your decision have a personal reason?

Did your difficulty influence your choice of Course or College?

Since school have you had any special help with reading or spelling?

From whom _____

Are you having or going to seek special help? Having ☐ Going to ☐ No ☐

Does your difficulty effect your LEARNING, i.e. notes reading or memory?

Does it effect your written PERFORMANCE, i.e. course work, exams?

What are your main difficulties at College?

Have you tried to come to terms with them?

Do the tutors/the College understand? Yes ☐ No ☐

Special concessions course work/exams

course work exams

discounting
spelling

paper read

course work exams

--	--

--	--

amenueensis

course work exams

time
ing

Do you try to conceal your difficulty Yes ☐ No ☐

Yes, Generally/Only in certain circumstances ☐ No ☐

How _____

Have you any special ways of coping with your difficulty?

Typing ☐
Notes ☐
Diagrams ☐

Tape recorder ☐
Efficient learning ☐

Speed reading ☐
Ask good speller ☐

SUMMARY

Verbal IQ _____

Reading Age _____

Performance IQ _____

Spelling Age _____

Full Scale IQ _____

Signs _____

Other tests _____

General factors

Recommendations

Actions

A P P E N D I X D

NAME-F H T
ID NUMBER-0
AGE-59
SEX-M

16PF
PERSONALITY PROFILE

PERSONALITY FACTORS														PER-
SCORE		TRAIT	LOW MEANING										HIGH MEANING	CENT
RAW	ST-N		1	2	3	4	5	6	7	8	9	10		
	4	A	COOL, RESERVED										WARM, EASYGOING	23
N	8	B	DULL										BRIGHT	89
O	3	C	EASILY UPSET										CALM, STABLE	11
T	10	E	NOT ASSERTIVE										DOMINANT	99
	7	F	SOBER, SERIOUS										HAPPY-GO-LUCKY	77
	4	G	EXPEDIENT										CONSCIENTIOUS	23
A	10	H	SHY, TIMID										VENTURESOME	99
V	6	I	TOUGH-MINDED										TENDER-MINDED	60
A	10	L	TRUSTING										SUSPICIOUS	99
I	7	M	PRACTICAL										IMAGINATIVE	77
L	5	N	FORTHRIGHT										SHREWD	40
A	6	O	SELF-ASSURED										APPREHENSIVE	60
B	10	Q1	CONSERVATIVE										EXPERIMENTING	99
L	5	Q2	GROUP-ORIENTED										SELF-SUFFICIENT	40
E	3	Q3	UNDISCIPLINED										SELF-DISCIPLINED	11
	8	Q4	RELAXED										TENSE, DRIVEN	89

=====

F H T

16PF
SUMMARY OF SECOND-ORDER FACTORS

1. EXTRAVERSION	(8.5).	
2. ANXIETY	(7.3).	
3. TOUGH POISE	(7.6).	
4. INDEPENDENCE	(10.0).	
5. ACADEMIC POTENTIAL	(4.8).	
6. LEADERSHIP POTENTIAL	(5.5).	
7. INTERPERSONAL CONTACT	(6.1).	
8. DEPENDABILITY	(1.8).	
9. LEARN & GROW	(4.2).	
10. ACCIDENT PRONENESS	(9.0).	
11. CREATIVITY	(8.9).	
12. ADEQUACY OF ADJUSTMENT	(5.1).	
13. NEUROTIC MALADJUSTMENT	(6.0).	
14. BEHAVIOUR CONTROL INDEX	(2.4).	
15. FREEDOM FROM PATHOLOGY	(18.0).	(AVERAGE = 22)
16. JOB SUCCESS	(50.0).	(AVERAGE = 55)

A P P E N D I X E

PERSONAL-CAREER DEVELOPMENT PROFILE

F. T.
SEX M

AGE 59

ID NUMBER 0010-00-1

GENERAL OVERVIEW PATTERNS

Mr T's life style is independent and self-directed. He will make active attempts to achieve freedom of choice in his life and work. He tends to derive his major satisfactions in life from opportunities for achievement in the face of competition. He usually likes exercising influence over others in his efforts to meet difficult challenges. He is likely to feel most at ease in working conditions that are flexible, varied, and unstructured. Mr T. is likely to accept a role of leadership in a group of friends or co-workers if it is offered and his style of leadership is likely to be acceptable to most members of the group.

PROBLEM SOLVING PATTERNS

Mr T. deals quite competently with problems which involve abstract concepts and relationships. He is usually able to integrate detail. He needs, at times, to guard against making errors of judgement by exercising greater care and foresight. He likes to experiment. He is generally able to tolerate inconvenience and change, but is apt to be critical about things before accepting them. He has an inquiring mind and may be a little too ready to be critical of traditional points of view. Mr T. is generally quite decisive, action-oriented and enterprising. However, he may take an over-simplified view at times and overlook some subtle but important consequences of his actions. He generally looks for facts and evidence, is open to new ideas and responds quickly to most problems. He can take an innovative approach when the circumstances require it.

PATTERNS FOR COPING WITH STRESSFUL CONDITIONS

Mr T. appears to be able to tolerate a fair degree of pressure without becoming upset. However, he is a sensitive person who tends to take it to heart when something important to him goes wrong. Mr T. may need to guard against his tendency to demonstrate his emotions and feelings in stressful situations. When he finds himself under stress he needs to guard against an inclination to withdraw from the situation. However, he is rather restless and tense at present, possibly because of some unfulfilled ambitions or drive. His regard for strict rules is not high, nor does he have much respect for demands to conform to them. Rather he does what he considers needs to be done in the circumstances. He tends to be flexible and does not rigidly follow rules and established practices. He tends to be somewhat casual in his approach to things, and is likely to follow his own impulses and intuitions rather than exercise conscious control over his feelings. Generally, when Mr T. is faced with conflict or opposition from others, he will tend to assert his viewpoint and challenge the opposition. However, if pressed far enough, he is likely to either give in or break off involvement, whichever he considers to be more advantageous for the moment.

PATTERNS OF INTERPERSONAL INTERACTION

On the whole, Mr T. tends to direct his attention outwards to other people and the world around him rather than to focus on his own thoughts and feelings. In his dealings with others, he is usually reserved, cool and detached. He prefers to do things alone rather than with other people. He is well prepared to assert himself, and likes to be free from the influence of others. He tends to be competitive, and appreciates that controlling other people can be advantageous to him. He takes a cautious view of others and may sometimes doubt their intentions. Mr T. is likely, on occasion, to insist on getting his point of view across to others and to oppose people rather strongly. Therefore, he should try not to take offence or to feel resentful if they react to this. He is spontaneous and confident when dealing with others. He likes meeting and talking with people. At times he may be unaware, however, of his impact on others and run the risk of being viewed as pushy and too ready to express his views. If he were to

assume a leadership role, he is likely to be assertive in directing others and to use a variety of means of challenging them.

PERSONAL-CAREER DEVELOPMENT CONSIDERATIONS

Mr T. shows a marked preference for work which involves meeting and interacting with people. He generally gains most satisfaction when he is in a position of leadership, and is able to direct the actions of others. Mr T's profile pattern is rather complex, and it is suggested if he is assigned to a work environment which is flexible and satisfaction and performance level may be increased if he is assigned to a work environment which is flexible and somewhat unstructured. If the circumstances permit, he should have the kind of supervision which will allow him to explore new ideas and approaches in solving problems. In conclusion, he could try to become more sensitive to the needs of people and give more thought to how he should deal with them. And a determined effort to formulate precise plans and action steps, and then to follow them through, should help him become more self-disciplined and consistent. Mr T. shows moderate interest in the kinds of disciplined activities required by formal academic training. Taking steps to become more informed about the world of work and the requirements for progressing in his career should help and encourage Mr T. to build a deeper understanding of the benefits to be gained from broadening his experience and training. He should seek out opportunities to grow in this way rather than remain content with his usual ways for achieving self-fulfilment.

PATTERNS FOR CAREER, OCCUPATIONAL, AND LEISURE ACTIVITIES

Keep in mind that the following suggestions are based entirely on the pattern of personality characteristics. It is important that they be considered in relation to academic/practical qualifications, abilities, aptitudes and interests. Mr T's profile suggests that he is likely to enjoy career-oriented and/or spare-time activities which entail use of data-processing, office practice, verbal and numerical skills to organize information and tasks according to prescribed plans and well established procedures and systems; being near or at the centre of group efforts and solving problems through discussions with others, or by taking a guiding, helpful role; convincing, directing, or persuading others towards the attainment of organizational goals and/or economic gain. His profile appears to be similar to people who express quite strong interest in one or more of the following fields: business-data processing systems, financial, clerical, or office practice; educational, health care, religious, or social service; administrative, business management, consulting, legal/political, merchandising, or sales.

NOTE FOR THE READER

This report has been processed by computer, based on a programme developed to draw out implications not only of the basic personal characteristics or traits identified by the 16PF but also of patterns and interactions between these characteristics. However, it is impossible for a computer programme to take account of the more subtle combinations in the way that a trained and highly experienced interpreter of the 16PF brings out the range of an individual's attitudes without losing sight of the "whole" person. Hence, apparent inconsistencies could occur in the wording of a report. For oral discussion of any aspect, telephone IARC (01-486-6106), giving the identification number.

SCORES REPORTED ON THIS PAGE HAVE BEEN COMPUTED BY COMPARING 16PF SCORES WITH PROFILES FROM THE OCCUPATIONS LISTED BELOW. ANY REVIEW AND CONSIDERATION OF THEM FOR CAREER PLANNING SHOULD BE REGARDED AS TENTATIVE RATHER THAN CONCLUSIVE. THESE SCORES MUST BE CONSIDERED ALONG WITH OTHER RELEVANT INFORMATION ABOUT ABILITIES, SKILLS, INTERESTS, EDUCATIONAL PREPARATION, AND WORK EXPERIENCES.

OCCUPATIONAL TITLE	SCORE*	OCCUPATIONAL TITLE	SCORE*	OCCUPATIONAL TITLE	SCORE*
VENTUROUS-INFLUENTIAL (V) OCCUPATIONS	7.2	NURTURING-ALTRUISTIC (N) OCCUPATIONS	7.7	CREATIVE-SELF-EXPRESSIVE (C) OCCUPATIONS	10.0
ADMINISTRATORS-MID-LEVEL	6.3	ELEMENTARY SCHOOL TEACHERS	5.6	ARTISTS	10.0
AIRLINE STEWARDS	5.6	EMPLOYMENT COUNSELLORS	9.2	HIGH SCHOOL TEACHERS	8.3
AIRLINE PILOTS	4.7	PRIESTS (R,C.)	7.3	MUSICIANS	9.1
BUSINESS EXECUTIVES	7.5	PSYCHIATRIC TECHNICIANS	8.3	PROFESSIONAL NURSES	7.8
ESTATE AGENTS	8.6	PSYCHOLOGISTS	9.7	UNIVERSITY ADMINISTRATORS	9.1
RETAIL COUNTER CLERKS	10.0	SCHOOL COUNSELLORS	6.7	WRITERS	10.0
SALES, RETAIL	1.6	SCHOOL SUPERINTENDENTS	7.4		
SALES, WHOLESALE	3.9	SOCIAL WORKERS	5.6		
SERVICE STATION DEALERS	4.1	TEACHING-GENERAL	6.2		
PROCEDURAL-SYSTEMATIC (P) OCCUPATIONS	5.9	ANALYTIC-SCIENTIFIC (A) OCCUPATIONS	6.3	MECHANICAL-OPERATIVE (M) OCCUPATIONS	3.0
ACCOUNTANTS	8.3	BIOLOGISTS	9.8	ELECTRICIANS	4.4
BANK MANAGERS	6.0	CHEMISTS	8.0	FIREMEN	7.4
CO-OPERATIVE UNION MANAGERS	7.8	COMPUTER PROGRAMMERS	9.1	CARETAKERS	6.0
DEPT. STORE MANAGERS	6.0	EDITORIAL WORKERS	7.7	KITCHEN WORKERS	2.6
PERSONNEL MANAGERS	8.2	ENGINEERS	7.3	MACHINE OPERATORS	2.0
PRODUCTION MANAGERS	7.9	GEOLOGISTS	6.1	MECHANICS	8.7
SALES MANAGERS-SUPERVISORS	9.1	PHYSICIANS	3.8	FOREMEN-SUPERVISORS	5.0
SECRETARIES-CLERKS	6.4	PHYSICISTS	9.3	POLICE-CITY	3.5
TIME-MOTION STUDY ANALYSTS	8.4	UNIVERSITY PROFESSORS	8.1	VEHICLE DRIVERS	4.9

SCORES RANGE FROM 1-10. SCORES OF 1-3 ARE CONSIDERED VERY LOW. SCORES OF 8-10 ARE CONSIDERED VERY HIGH. SCORES OF 4-7 ARE AVG.

F. T.

-4-

SEX M

AGE 59

ID NUMBER 0010-00-1

THESE PAGES OF 16PF SCORES ARE INTENDED FOR USE BY PROPERLY QUALIFIED PROFESSIONALS ONLY. SCORES SHOULD BE TREATED CONFIDENTIALLY, AND THE RESULTS EMBODIED HEREIN SHOULD NOT BE SUBSTITUTED FOR OTHER VALID INFORMATION ABOUT THIS PERSON.

	LOW MEANING	16PF PROFILE										HIGH MEANING
		1	2	3	4	5	6	7	8	9	10	
A 4	RESERVED			*								WARM-FRIENDLY
B 8	LESS INTELLIGENT								*			MORE INTELLIGENT
C 3	AFFECTED BY FEELINGS			*								CALM-UNRUFFLED
E 10	NOT ASSERTIVE										*	DOMINANT
F 7	REFLECTIVE-SERIOUS							*				ACTIVE (IMPULSIVE)
G 4	EXPEDIENT				*						*	CONSCIENTIOUS
H 10	SHY										*	SOCIAL-VENTURESOME
I 6	TOUGH-MINDED-SUBJECTIVE					*					*	TENDER-MINDED-SUBJECTIVE
L 10	TRUSTING										*	SUSPICIOUS
M 7	PRACTICAL						*					IMAGINATIVE
N 5	FORTHRIGHT				*							SHREW
O 6	CONFIDENT					*						APPREHENSIVE
Q1 10	CONSERVATIVE									*		EXPERIMENTING
Q2 5	GROUP-ORIENTED		*									SELF-SUFFICIENT
Q3 3	UNDISCIPLINED			*								SELF-DISCIPLINED
Q4 8	RELAXED						*					TENSE

BROAD PATTERNS

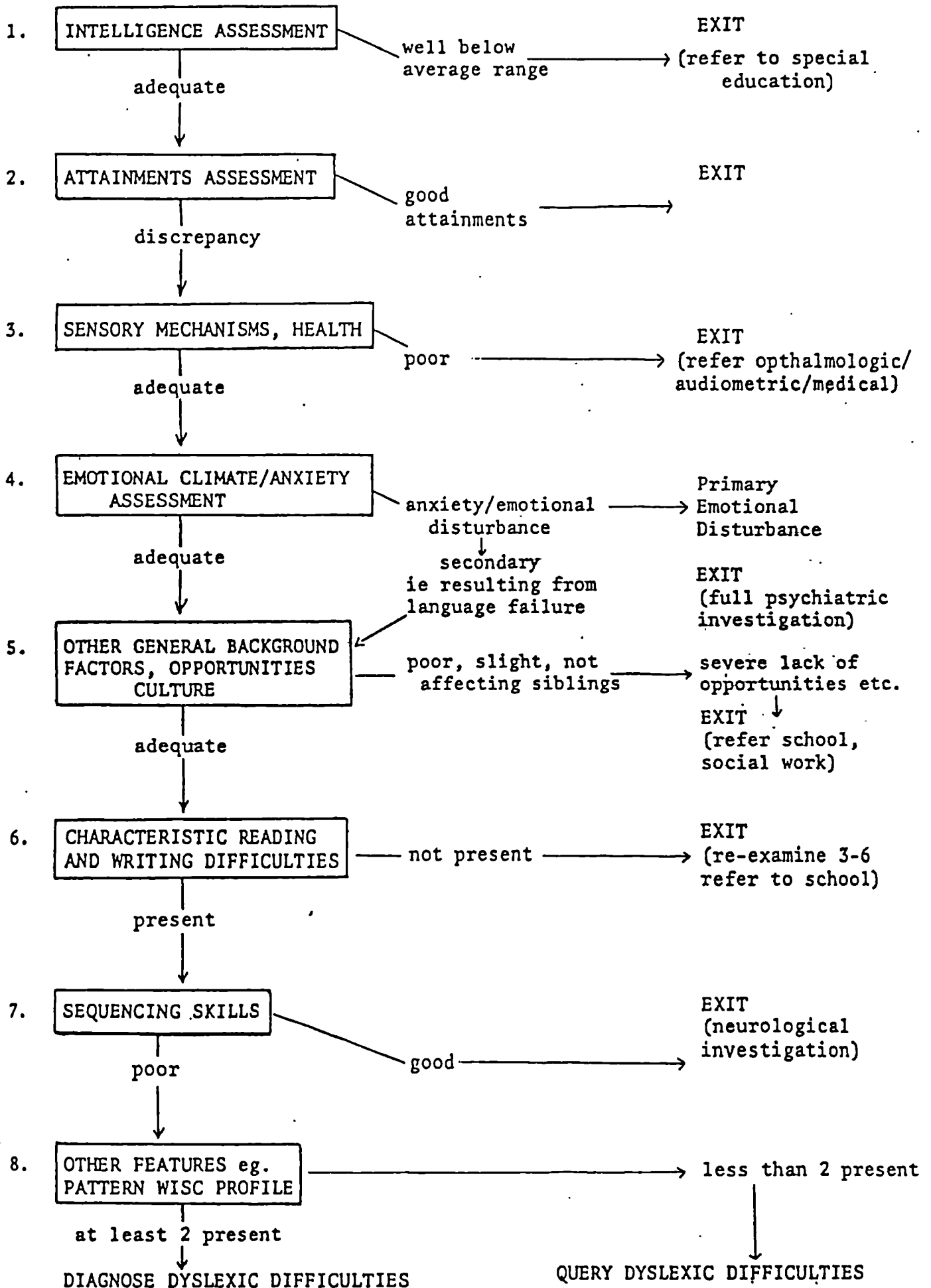
EXTRAVERSION IS 8.4 HIGH
TOUGH POISE IS 7.6 HIGH
INDEPENDENCE IS 10.0 EXTREMELY HIGH
DEPENDABILITY 1.8 VERY LOW
ACCIDENT-ERROR PRONENESS IS PREDICTED TO BE 9.0 VERY HIGH
POTENTIAL TO LEARN FROM ON-THE-JOB EXPERIENCE IS 4.2 BELOW AVERAGE
POTENTIAL TO PROFIT FROM FORMAL ACADEMIC TRAINING IS 4.8 AVERAGE
CREATIVITY AND INVENTIVENESS ARE ESTIMATED TO BE 8.8 VERY HIGH
LEADERSHIP POTENTIAL 5.5 AVERAGE

COUNSELLING CONSIDERATIONS

ADEQUACY OF ADJUSTMENT IS 5.1 AVERAGE
LEVEL OF ANXIETY IS 7.3 ABOVE AVERAGE
EFFECTIVENESS OF BEHAVIOUR CONTROLS IS 2.4 VERY LOW
ACTING-OUT BEHAVIOUR TENDENCIES ARE 10.0 EXTREMELY HIGH

A P P E N D I X F

DIAGNOSTIC FLOW CHART



A P P E N D I X G

Correlations among the Primary Source Traits of the 16PF, Form E

A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
-11															
13	05														
13	00	-24													
12	03	-01	22												
12	10	21	-45	-20											
29	02	32	-03	17	06										
40	-08	03	-12	-14	06	15									
-10	-03	-31	34	20	-34	-04	-10								
09	01	12	-03	-06	05	18	21	-08							
02	-02	03	-02	-06	07	06	12	-06	06						
-11	-07	-48	04	-04	-06	-49	-07	14	-15	-01					
-03	09	07	16	04	-16	15	10	13	11	-03	-14				
-35	-05	-31	15	-29	-18	-48	-13	12	-04	-02	34	-03			
21	-01	42	-36	-14	32	33	09	-31	11	06	-37	-03	-31		
-07	-08	-58	21	-05	-15	-39	01	20	-15	00	57	-08	31	-43	

Note: Decimal points have been omitted. (Based on data from 914 male convicts, Cattell 1976)

A P P E N D I X H

FURTHER EDUCATION - 16PF Factor Correlations, Form E

Calculated using Spearman's
Correlation Coefficients

N = 10

* = $P < .05$

** = $P < .01$

A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
-58*															
34	-21														
64*	-47	06													
49	-74*	22	44												
37	-39	26	-12	58*											
56*	-66*	72	09	58*	55*										
03	44	10	-02	-17	-28	03									
18	02	-19	16	-41	-53	21	27								
57*	-55*	37	46	33	34	57*	-00	-10							
37	27	-05	-19	-10	49	00	18	08	-07						
-51	71*	-71*	-19	-74	65*	-91*	22	48	-56	10					
00	-61*	00	-07	31	23	42	-19	23	23	-27	-30				
63*	50	-53*	25	-12	-37	-72*	18	-29	-35	-33	52*	-34			
50	-46	61*	-03	37	43	84*	-10	-32	40	08	**77	03	-67		
-25	35	-66*	-09	-30	-05	-74*	-00	25	-25	31	**66	-07	45	-81	

Note: Decimal points have been omitted.

A P P E N D I X I

HIGHER EDUCATION - 16PF Factor Correlations, Form E

Calculated using Spearman's
Correlation Coefficients

N = 10

* = $P < .05$

** = $P < .01$

A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
08															
40	33														
*53	-10	19													
39	10	-38	06												
-02	51	*62	-08	-20											
-26	-20	31	10	34	-00										
42	03	38	-09	03	28	-02									
43	14	08	*70	34	-23	35	-15								
-12	15	-03	23	01	-01	33	-50	64							
-28	*52	24	-39	*55	43	-34	14	31	-19						
-15	02	-23	-18	22	-06	48	-16	06	-04	21					
-05	-32	-35	-26	42	-30	48	17	17	36	*53	-12				
*78	19	-04	-49	*72	30	-19	-16	49	-01	*73	-06	-29			
-07	30	30	30	-23	48	-28	-39	04	38	-01	-57	-29	23		
-08	38	*56	-38	49	-08	19	33	17	02	31	47	18	06	-40	

Note: Decimal points have been omitted

A P P E N D I X J

OPEN UNIVERSITY - 16PF Factor Correlations, Form E

Calculated using Spearman's
Correlation Coefficients

N = 10

* = $P < .05$

** = $P < .01$

	A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
A																
B	-21															
C	48	32														
E	-15	11	-01													
F	-05	-11	03	*58												
G	30	*57	27	-25	16											
H	16	-51	-16	-33	18	43										
I	34	-19	16	-61	*72	43	09									
L	-16	09	-33	*60	33	-26	18	25								
M	19	44	51	13	-22	12	-52	41	11							
N	-26	-40	-33	-29	02	45	*72	28	17	39						
O	-28	-30	-09	-30	-21	20	42	-00	-22	-32	23					
Q ₁	-23	26	-47	12	11	*54	36	-46	*53	-43	13	17				
Q ₂	-11	23	-27	03	48	-32	08	*60	-01	*54	03	-34	46			
Q ₃	*59	-17	*56	-47	04	*75	19	40	*59	20	06	-04	-52	-01		
Q ₄	28	-68	-24	04	-06	23	*59	17	36	-21	25	44	18	-48	-17	

Note: Decimal points have been omitted.

A P P E N D I X K

TERTIARY EDUCATION (All Subjects) - 16PF Factor Correlations

Calculated using Spearman's
Correlation Coefficients

N = 30

* = $P < .05$

** = $P < .01$

A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄
-22															
34	10														
41	-14	01													
18	-20	04	24												
-00	-01	42	-26	24											
32	-40	19	03	13	02										
34	10	13	-15	42	-00	06									
19	09	-13	51	11	-31	11	-06								
24	-00	29	27	01	15	07	10	14							
-18	07	-01	-28	-09	49	-15	11	-02	-14						
43	18	39	-13	-01	04	33	-03	10	-25	27					
-00	-26	21	00	-15	-28	43	-07	26	02	-30	-15				
46	33	36	-17	18	-14	-24	-19	-28	35	11	-06	-08			
31	-09	48	-14	05	49	23	-11	-26	32	-00	43	-21	-11		
-10	12	52	-05	-00	-02	-16	08	25	-04	30	54	01	06	-40	

Note: Decimal points have been omitted.

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